

# SECTION A. DETAILED STATISTICAL TABLES

| <i>Section</i>                            | <i>Page</i> |
|---|-------------|
| Table Notes .....                         | 6           |
| List of Detailed Statistical Tables ..... | 10          |
| Tables .....                              | 14          |

# TABLE NOTES

These notes pertain to the tables in this section and in section B, except as noted in footnotes and other explanatory information at the end of specific tables.

## COMPANY SIZE

Companies were categorized by total number of domestic employees. The following are the size classes used in this report (see Comparability of Statistics in section B for information on how this expanded array of company size classes compares to size classes used previously):

- 5–24 employees
- 25–49 employees
- 50–99 employees
- 100–249 employees
- 250–499 employees
- 500–999 employees
- 1,000–4,999 employees
- 5,000–9,999 employees
- 10,000–24,999 employees
- 25,000 or more employees

The survey excludes companies with fewer than five employees to limit burden on small business enterprises in compliance with the Office of Management and Budget's (OMB) guidelines for Federal government data collection activities.

## CURRENT AND CONSTANT DOLLARS

Statistics in all tables are reported in current dollars. Constant dollars also are presented in the summary tables (A-1, A-24, A-25, and A-26). Gross domestic product (GDP) implicit price deflators were used to convert current to constant dollars (see *The Methodology Underlying the Measurement of R&D Expenditures: 2000 (Data Update)* at <http://www.nsf.gov/sbe/srs/srs02902/srs02902.pdf> for a detailed discussion of the application of the deflators).

## DISCLOSURE AND SUPPRESSION OF STATISTICS

Title 13 of the United States Code and a pledge of confidentiality to respondents prohibit publication or release of data or statistics that may reveal information about individual companies. Therefore, the data in some table cells have been deleted and replaced with "D." This occurs when a small number of companies account for a

large percentage of the estimate in a particular data cell. Although publication of certain cells may be withheld, the estimates in the cells are always included in totals. The tables most often affected by cell suppression are those that contain data on Federal support for industrial R&D performance.

## GEOGRAPHIC STATISTICS

The statistics in this report cover only those operations located in the 50 U.S. states and the District of Columbia (D.C.). Statistics on company-sponsored R&D performed outside the 50 U.S. states and D.C. by foreign subsidiaries of U.S. domestic companies are included in tables A-11 and A-12 but excluded from all other tables.

## HISTORICAL STATISTICS

Prior to the 1999 report, tables classified by industry contained the current survey's statistics plus statistics for 10 previous years. Because of the new classification system (see below), these tables now contain only statistics for the current year and prior years back through 1999. In *Research and Development in Industry: 2000* an effort was made to provide a bridge for users who wanted to make year-to-year comparisons below the aggregate level. In several tables statistics from the 1997 and 1998 cycles of the survey, which were previously classified and published using the standard industrial classification (SIC) system, were reclassified using the new North American Industrial Classification System (NAICS) codes. These reclassified statistics were published using their new NAICS classifications and were shown alongside the 1999 and 2000 statistics, which were estimated using NAICS from the outset.

## INDUSTRY CLASSIFICATION

One North American Industrial Classification System (NAICS) code was assigned to each company. Multi-establishment companies were assigned a single code based on the most dominant aggregated activity for that firm in terms of total payroll. Statistics for the following industries and industry groupings are published in this report (NAICS codes are given on the right) (see Comparability of Statistics in section B for information on NAICS and how it compares with the Standard Industrial Classification (SIC) system used in reports prior to the 1999 edition. The 1997 version of NAICS was used for the 1999–2001 surveys):

|  |   |
|--|---|
| Manufacturing industries   | 31, 32, 33  |
| Food   | 311   |
| Beverage and tobacco products                                    | 312   |
| Textiles, apparel, and leather                                   | 313, 314, 315, 316  |
| Wood products  | 321   |
| Paper, printing and support activities                           | 322, 323  |
| Petroleum and coal products                                      | 324   |
| Chemicals  | 325   |
| Basic chemicals  | 3251  |
| Resin, synthetic rubber, fibers, and filament                    | 3252  |
| Pharmaceuticals and medicines                                    | 3254  |
| Other chemicals  | 325 (minus 3251, 3252, 3254)                              |
| Plastics and rubber products                                     | 326   |
| Nonmetallic mineral products                                     | 327   |
| Primary metals   | 331   |
| Fabricated metal products  | 332   |
| Machinery  | 333   |
| Computer and electronic products                                 | 334   |
| Computers and peripheral equipment                               | 3341  |
| Communications equipment   | 3342  |
| Semiconductor and other electronic components                    | 3344  |
| Navigational, measuring, electromedical, and control instruments | 3345  |
| Other computer and electronic products                           | 334 (minus 3341, 3342, 3344, 3345)                        |
| Electrical equipment, appliances, and components                 | 335   |
| Transportation equipment   | 336   |
| Motor vehicles, trailers, and parts                              | 3361, 3362, 3363  |
| Aerospace products and parts                                     | 3364  |
| Other transportation equipment                                   | 336 (minus 3361, 3362, 3363, 3364)                        |
| Furniture and related products                                   | 337   |
| Miscellaneous manufacturing                                      | 339   |
| Medical equipment and supplies                                   | 3391  |
| Other miscellaneous manufacturing                                | 339 (minus 3391)  |
| Other manufacturing  | 31, 32, 33 (minus 311–316, 321–327, 331–337, 339)         |
| Nonmanufacturing industries                                      | 21, 22, 23, 42, 44, 45, 48, 49, 51–56, 61, 62, 71, 72, 81 |
| Mining, extraction, and support activities                       | 21  |
| Utilities  | 22  |
| Construction   | 23  |
| Trade  | 42, 44, 45  |
| Transportation and warehousing                                   | 48, 49  |
| Information  | 51  |
| Publishing   | 511   |
| Newspaper, periodical, book, and database                        | 5111  |
| Software   | 5112  |
| Broadcasting and telecommunications                              | 513   |
| Radio and television broadcasting                                | 5131  |
| Telecommunications   | 5133  |
| Other broadcasting and telecommunications                        | 513 (minus 5131, 5133)                                    |
| Other information  | 51 (minus 511, 513)                                       |
| Finance, insurance, and real estate                              | 52, 53  |

|  |                             |
|--|-----------------------------|
| Professional, scientific, and technical services       | 54                          |
| Architectural, engineering, and related services       | 5413                        |
| Computer systems design and related services           | 5415                        |
| Scientific R&D services                                | 5417                        |
| Other professional, scientific, and technical services | 54 (minus 5413, 5415, 5417) |
| Management of companies and enterprises                | 55                          |
| Health care services                                   | 621, 622, 623               |
| Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81     |

For 1999, 2000, and 2001, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values but with at least 5 employees were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Therefore, in the 1999 and 2000 reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals but were aggregated into “small manufacturing” and “small nonmanufacturing” classifications instead of being included in their respective industry classifications. For the 2001 report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the “small manufacturing” and “small nonmanufacturing” stublines are no longer present. For 1999 and 2000, statistics previously published for the firms in the small company classifications are included in the manufacturing, nonmanufacturing, and all industries totals. (See Frame Creation and Sample Selection in section B for more information on the 5-employee cutoff and partitioning of the statistical sample.)

## NONRESPONSE AND IMPUTATION

For various reasons, some firms did not choose to return the survey form or returned it with one or more blank items. (See Survey Nonresponse in section B for more information on the reasons for unit and item nonresponse.) Missing data for major data items were estimated using mathematical algorithms developed from industry comparisons, data from previous cycles of the survey, and other information. Therefore, the statistics in some table cells may be accompanied by the notation “S,” which indicates that the imputation rate—the percentage of the statistic not reported by respondents and conse-

quently estimated—exceeds 50 percent for that item. In such cases, the estimate may be statistically unreliable. See table B-5 for imputation rates for specific items.

## PERCENTAGES

Percentages were calculated on the basis of thousands of dollars and may differ slightly from those calculated using the rounded figures shown.

## REPORTING UNIT

The basic reporting unit was the company, firm, or enterprise that included all establishments under common ownership or control. All R&D expenditures and all information about scientists and engineers of each company were classified into a single NAICS code and size category.

## ROUNDING

Because of rounding, detail items may not add to totals. Most money amounts are expressed in millions of dollars and are rounded down if less than \$500,000 or up if \$500,000 or more. Frequency estimates (e.g., number of companies) are accumulated from decimal weights assigned to company records (see Weighting and Maximum Weights in section B for information on how company records are weighted) and are rounded down if less than 0.5 and rounded up if 0.5 or greater. Most employment counts (e.g., number of scientists and engineers) are expressed in thousands and are rounded down if less than 500 or up if 500 or greater.

## ZEROES

Zeroes are shown in the tables when numerical values are accumulated from the statistical file to estimate a particular cell and the accumulated sum rounds to or equals zero. In the latter case, this accumulated sum is sometimes referred to as a “true zero”. In the cases where there were no numerical values to accumulate, the cell is filled with “—” indicating that data were not collected. For example, in all tables cells for “other manufacturing” contains “—” because data were not collected.<sup>4</sup>

---

<sup>4</sup>With the advent of NAICS, data for the “other manufacturing” classification were not collected because all of the possible NAICS manufacturing industry classifications are represented elsewhere in the industry stub. In future years as NAICS is expanded, it is likely that data will be collected for the “other manufacturing” classification.

# LIST OF TABLES

| <i>Table</i>  | <i>Page</i> |
|---|-------------|
| <b>Total Funds for R&amp;D</b>  |             |
| A-1. Trends in total (Federal plus company and other) funds for industrial R&D performance in the U.S., by source of funds, in current and in constant dollars: 1953-2001 .....   | 14          |
| A-2. Summary data for companies performing industrial R&D in the U.S., by industry and size of company: 2000-2001 .....   | 16          |
| A-3. Total (Federal plus company and other) funds for industrial R&D performance in the U.S., by industry and size of company: 1999-2001 .....  | 19          |
| A-4. Total (Federal plus company and other) funds for industrial R&D performance in the U.S., by industry, by size of company: 2001 .....   | 22          |
| A-5. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. and number of companies that performed R&D in the U.S., by industry and size of company, by size of total R&D program: 2001 .....  | 24          |
| A-6. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. and number of companies in manufacturing and nonmanufacturing industries that performed industrial R&D in the U.S., by size of company: 2001 .....                           | 27          |
| <b>Company and Other Non-Federal Funds for R&amp;D</b>  |             |
| A-7. Company and other non-Federal funds for industrial R&D performance in the U.S., by industry and size of company: 1999-2001 .....   | 28          |
| A-8. Company and other non-Federal funds for industrial R&D performance in the U.S., by industry, by size of company: 2001 .....  | 31          |
| A-9. Company and other non-Federal funds for industrial R&D performance in the U.S. and number of companies that performed company and other nonfederally funded R&D in the U.S., by industry and size of company, by size of nonfederally funded R&D program: 2001 ..... | 34          |
| A-10. Company and other non-Federal funds for industrial R&D performance in the U.S. performed by outside organizations and number of R&D-performing companies that funded outside performance of R&D, by industry and size of company: 1999-2001 .....                   | 37          |
| A-11. Company and other non-Federal funds for industrial R&D performance outside of the U.S. and number of companies with subsidiaries that performed industrial R&D both within and outside of the U.S., by industry and size of company: 1999-2001 .....                | 40          |
| A-12. Company and other non-Federal funds for industrial R&D performance outside of the U.S., by location of R&D performance: 2001 .....  | 43          |

**Federal Funds for R&D**

|  |    |
|--|----|
| A-13. Federal funds for industrial R&D performance in the U.S., by industry and size of company: 1999-2001 .....   | 44 |
| A-14. Federal funds for industrial R&D performance in the U.S., by industry, by size of company: 2001 .....  | 48 |
| A-15. Federal funds for industrial R&D performance in the U.S. and number of companies that performed federally funded R&D in the U.S., by industry and size of company, by size of federally funded R&D program: 2001 ..... | 50 |
| A-16. Federal funds for industrial R&D performance in the U.S., by selected Federal agency and selected industry: 1999-2001 .....  | 53 |

**Sales of R&D-Performing Companies and R&D Funds as a Percentage of Sales**

|   |    |
|---|----|
| A-17. Domestic net sales of companies that performed industrial R&D in the U.S., by industry, by size of company: 2001 .....  | 54 |
| A-18. Concentration of total, Federal, and company and other industrial R&D funds and net sales of companies that performed industrial R&D in the U.S., ranked by size of R&D program: 1991-2001 .....  | 57 |
| A-19. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company: 1999-2001 .....                                      | 58 |
| A-20. Company and other non-Federal funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company: 1999-2001 .....   | 61 |
| A-21. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company, ranked by size of R&D program: 2001 .....            | 64 |
| A-22. Company and other non-Federal funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company, ranked by size of nonfederally funded R&D program: 2001 ..... | 67 |
| A-23. Federal funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company, ranked by size of federally funded R&D program: 2001 .....                          | 70 |

**Funds for Basic Research, Applied Research, and Development**

|   |    |
|---|----|
| A-24. Trends in total (Federal plus company and other) funds for performance of industrial basic research, applied research, and development in the U.S., in current and in constant dollars: 1953-2001 ..... | 73 |
|---|----|



| <i>Table</i>   | <i>Page</i> |
|--|-------------|
| A-25. Trends in company and other non-Federal funds for performance of industrial basic research, applied research, and development in the U.S., in current and in constant dollars: 1953-2001 .....   | 75          |
| A-26 Trends in Federal funds for performance of industrial basic research, applied research, and development in the U.S., in current and in constant dollars: 1953-2001 .....  | 77          |
| A-27 Funds for performance of and number of companies that performed industrial basic research, applied research, and development in the U.S., by industry and size of company, by source of funds: 2001 .....                               | 79          |
| <b>Energy R&amp;D</b>  |             |
| A-28. Total, Federal, company and other funds for industrial energy R&D performance in the U.S. and number of companies that performed energy R&D in the U.S., by selected industry and size of company: 2001 and projected 2002 .....       | 85          |
| A-29. Total, Federal, company and other funds for industrial energy R&D performance in the U.S. and number of companies that performed energy R&D in the U.S., by primary energy source: 2001 and projected 2002 .....                       | 86          |
| <b>Geographic Distribution of R&amp;D</b>  |             |
| A-30. Total (Federal plus company and other) funds for industrial R&D performance in the U.S., by state in selected years: 1983-2001 .....   | 87          |
| A-31. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. and number of companies that performed R&D in the U.S., by state and source of funds: 2001 .....   | 89          |
| A-32. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. and number of R&D-performing companies in the U.S., by industry and size of company, for the U.S. and top 10 R&D-performing states: 2001 ..... | 91          |
| <b>Distribution by Type of R&amp;D Cost</b>  |             |
| A-33. Total (Federal plus company and other) funds for industrial R&D performance in the U.S., by industry and size of company, by type of cost: 2001 .....  | 94          |
| <b>Employment of R&amp;D-Performing Companies</b>  |             |
| A-34. Domestic employment of companies that performed industrial R&D in the U.S., by industry, by size of company: 2001 .....  | 97          |
| A-35. R&D funds per employee spent by companies that performed industrial R&D in the U.S., by size of company: 1997-2001 .....   | 100         |
| A-36. Distribution of total employment in companies that performed industrial R&D in the U.S., ranked by size of R&D program: 1991-2001 .....  | 101         |



|  |     |
|--|-----|
| A-37. Number of full-time equivalent (FTE) R&D scientists and engineers in companies that performed industrial R&D in the U.S., by industry and size of company, by source of R&D funds: January 2002 .....  | 102 |
| A-38. R&D funds per full-time equivalent (FTE) R&D scientist or engineer spent by companies that performed industrial R&D in the U.S., by industry, by size of company: 2001 .....   | 105 |
| A-39. R&D funds per full-time equivalent (FTE) R&D scientist or engineer spent by companies that performed industrial R&D in the U.S., ranked by size of R&D program: 1991-2001 .....  | 108 |
| A-40. Full-time equivalent (FTE) R&D scientists and engineers per 1,000 employees in companies that performed industrial R&D in the U.S., by industry and size of company: 1999-2001 .....   | 109 |
| <b>Distribution of R&amp;D by Technology Area</b>  |     |
| A-41 Total (Federal plus company and other) funds for industrial R&D performance in the U.S., by industry and size of company, by technology area: 2001 .....  | 112 |
| <b>Company and Other Non-Federal Funds for R&amp;D Performed by Outside Organizations by Type of Organization</b>  |     |
| A-42 Company and other non-Federal funds for industrial R&D performance in the U.S. by outside organizations and number of R&D-performing companies that funded outside performance of R&D, by type of organization, by industry and size of company: 2001 ..... | 115 |

Table A-1. Trends in total (Federal plus company and other) funds for industrial R&D performance in the U.S., by source of funds, in current and in constant dollars: 1953-2001

Page 1 of 2

| Year              | Total R&D <sup>1</sup> |                       | Federal <sup>1</sup> |                       | Company <sup>2</sup> |                       |
|-------------------|------------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|
|                   | Current dollars        | Constant 1996 dollars | Current dollars      | Constant 1996 dollars | Current dollars      | Constant 1996 dollars |
|                   | (Millions of dollars)  |                       |                      |                       |                      |                       |
| 1953              | 3,630                  | 18,857                | 1,430                | 7,429                 | 2,200                | 11,429                |
| 1954              | 4,070                  | 20,936                | 1,750                | 9,002                 | 2,320                | 11,934                |
| 1955              | 4,640                  | 23,458                | 2,180                | 11,021                | 2,460                | 12,437                |
| 1956              | 6,605                  | 32,298                | 3,328                | 16,274                | 3,277                | 16,024                |
| 1957              | 7,731                  | 36,588                | 4,335                | 20,516                | 3,396                | 16,072                |
| 1958              | 8,389                  | 38,766                | 4,759                | 21,992                | 3,630                | 16,774                |
| 1959              | 9,618                  | 43,958                | 5,635                | 25,754                | 3,983                | 18,204                |
| 1960              | 10,509                 | 47,359                | 6,081                | 27,404                | 4,428                | 19,955                |
| 1961              | 10,908                 | 48,610                | 6,240                | 27,807                | 4,668                | 20,802                |
| 1962              | 11,464                 | 50,413                | 6,434                | 28,294                | 5,029                | 22,115                |
| 1963              | 12,630                 | 54,913                | 7,270                | 31,609                | 5,360                | 23,304                |
| 1964              | 13,512                 | 57,892                | 7,720                | 33,076                | 5,792                | 24,816                |
| 1965              | 14,185                 | 59,651                | 7,740                | 32,548                | 6,445                | 27,103                |
| 1966              | 15,548                 | 63,565                | 8,332                | 34,064                | 7,216                | 29,501                |
| 1967              | 16,385                 | 64,994                | 8,365                | 33,181                | 8,020                | 31,813                |
| 1968              | 17,429                 | 66,270                | 8,560                | 32,548                | 8,869                | 33,722                |
| 1969              | 18,308                 | 66,357                | 8,451                | 30,631                | 9,857                | 35,727                |
| 1970              | 18,067                 | 62,171                | 7,779                | 26,769                | 10,288               | 35,403                |
| 1971              | 18,320                 | 60,026                | 7,666                | 25,118                | 10,654               | 34,908                |
| 1972              | 19,552                 | 61,446                | 8,017                | 25,195                | 11,535               | 36,251                |
| 1973              | 21,249                 | 63,241                | 8,145                | 24,241                | 13,104               | 39,000                |
| 1974              | 22,887                 | 62,499                | 8,220                | 22,447                | 14,667               | 40,052                |
| 1975              | 24,187                 | 60,422                | 8,605                | 21,496                | 15,582               | 38,926                |
| 1976              | 26,997                 | 63,823                | 9,561                | 22,603                | 17,436               | 41,220                |
| 1977              | 29,825                 | 66,248                | 10,485               | 23,290                | 19,340               | 42,959                |
| 1978              | 33,304                 | 69,052                | 11,189               | 23,199                | 22,115               | 45,853                |
| 1979              | 38,226                 | 73,160                | 12,518               | 23,958                | 25,708               | 49,202                |
| 1980              | 44,505                 | 78,024                | 14,029               | 24,595                | 30,476               | 53,429                |
| 1981              | 51,810                 | 83,069                | 16,382               | 26,266                | 35,428               | 56,803                |
| 1982              | 58,650                 | 88,528                | 18,545               | 27,992                | 40,105               | 60,536                |
| 1983              | 65,268                 | 94,756                | 20,680               | 30,023                | 44,588               | 64,733                |
| 1984              | 74,800                 | 104,703               | 23,396               | 32,749                | 51,404               | 71,954                |
| 1985              | 84,239                 | 114,315               | 27,196               | 36,906                | 57,043               | 77,409                |
| 1986              | 87,823                 | 116,615               | 27,891               | 37,035                | 59,932               | 79,580                |
| 1987              | 92,155                 | 118,787               | 30,752               | 39,639                | 61,403               | 79,148                |
| 1988 <sup>3</sup> | 97,015                 | 120,951               | 30,343               | 37,829                | 66,672               | 83,122                |
| 1989 <sup>3</sup> | 102,055                | 122,559               | 28,554               | 34,291                | 73,501               | 88,268                |

See explanatory information and SOURCE at end of table.

**Table A-1. Trends in total (Federal plus company and other) funds for industrial R&D performance in the U.S., by source of funds, in current and in constant dollars: 1953-2001**

Page 2 of 2

| Year                | Total R&D <sup>1</sup> |                       | Federal <sup>1</sup> |                       | Company <sup>2</sup> |                       |
|---------------------|------------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|
|                     | Current dollars        | Constant 1996 dollars | Current dollars      | Constant 1996 dollars | Current dollars      | Constant 1996 dollars |
|                     | (Millions of dollars)  |                       |                      |                       |                      |                       |
| 1990 <sup>3</sup>   | 109,727                | 126,837               | 28,125               | 32,511                | 81,602               | 94,327                |
| 1991 <sup>3</sup>   | 116,952                | 130,439               | 26,372               | 29,413                | 90,580               | 101,026               |
| 1992 <sup>4</sup>   | 119,110                | 129,693               | 24,722               | 26,919                | 94,388               | 102,774               |
| 1993 <sup>4</sup>   | 117,400                | 124,827               | 22,809               | 24,252                | 94,591               | 100,575               |
| 1994 <sup>4</sup>   | 119,595                | 124,565               | 22,463               | 23,397                | 97,131               | 101,168               |
| 1995 <sup>4</sup>   | 132,103                | 134,662               | 23,451               | 23,905                | 108,652              | 110,756               |
| 1996 <sup>4</sup>   | 144,667                | 144,667               | 23,653               | 23,653                | 121,015              | 121,015               |
| 1997 <sup>4</sup>   | 157,539                | 154,526               | 23,928               | 23,470                | 133,611              | 131,055               |
| 1998 <sup>4</sup>   | 169,180                | 163,934               | 24,164               | 23,415                | 145,016              | 140,519               |
| 1999 <sup>4,5</sup> | 182,711                | 174,592               | 22,535               | 21,534                | 160,176              | 153,059               |
| 2000 <sup>4</sup>   | 199,539                | 186,677               | 19,118               | 17,886                | 180,421              | 168,791               |
| 2001 <sup>4</sup>   | 198,505                | 181,416               | 16,899               | 15,444                | 181,606              | 165,971               |

<sup>1</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

<sup>2</sup> The company-funded R&D in this table is the industrial R&D performed within company facilities funded from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments. Excluded from this table are company-funded R&D not performed within the company (e.g., R&D contracted out to other organizations) and company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations).

<sup>3</sup> As a result of a new sample design, statistics for 1988-91 were revised after they were originally published and are not directly comparable with statistics for earlier years. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

<sup>4</sup> As a result of annual sampling, implemented to produce statistics that better reflect R&D performance among firms in nonmanufacturing industries and small firms in all industries, statistics for 1992 and later years are not directly comparable with statistics for earlier years. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

<sup>5</sup> Statistics for 1999 have been revised since originally published. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

NOTE: Gross domestic product (GDP) implicit price deflators were used to convert current dollars to constant (1996) dollars.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-2. Summary data for companies performing industrial R&amp;D in the U.S., by industry and size of company: 2000-2001

Page 1 of 3

Page 1 of 3

| Industry and size of company                                     | NAICS codes                  | Research and development funds |         |                      |         |         |         | Domestic net sales |             | R&D scientists and engineers (January) <sup>2</sup> |           | Domestic employment (March) |        |
|--|------------------------------|--------------------------------|---------|----------------------|---------|---------|---------|--------------------|-------------|---|-----------|-----------------------------|--------|
|  |                              | Total <sup>1</sup>             |         | Federal <sup>1</sup> |         | Company |         |                    |             | (January) <sup>2</sup>                              |           | (March)                     |        |
|  |                              | 2000                           | 2001    | 2000                 | 2001    | 2000    | 2001    | 2000               | 2001        | 2001  | 2002      | 2000                        | 2001   |
|  |                              | [In millions of dollars]       |         |                      |         |         |         |                    |             | [In thousands]                                      |           |                             |        |
| Distribution by industry:  |                              |                                |         |                      |         |         |         |                    |             |   |           |                             |        |
| All industries   | 21-23, 31-33, 42, 44-81      | 199,539                        | 198,505 | 19,118               | 16,899  | 180,421 | 181,606 | 5,249,573          | 4,835,140   | 1,041.3   | 1,060.2   | 17,663                      | 16,749 |
| Manufacturing  | 31-33                        | 124,078                        | 120,705 | 13,328               | 11,484  | 110,750 | 109,221 | 3,405,208          | 3,012,938   | 608.8   | 615.8     | 11,010                      | 9,913  |
| Food   | 311                          | (D)                            | 1,819   | (D)                  | 0       | 1,157   | 1,818   | 311,654            | 384,846     | 7.7   | 12.2      | 1,180                       | 1,192  |
| Beverage and tobacco products                                    | 312                          | 430                            | 152     | 0                    | 0       | 430     | 152     | 56,737             | 37,026      | 2.0   | 0.9       | 89                          | 59     |
| Textiles, apparel, and leather                                   | 313-16                       | (D)                            | (D)     | (D)                  | (D)     | 266     | 255     | 35,137             | 30,929      | 2.1   | 2.5       | 239                         | 229    |
| Wood products  | 321                          | 180                            | 182     | 0                    | 0       | 180     | 181     | 13,602             | 17,041      | 1.6 (S)   | 2.0 (S)   | 75                          | 92     |
| Paper, printing and support activities                           | 322, 323                     | (D)                            | (D)     | (D)                  | (D)     | 2,710   | 2,664   | 167,446            | 125,696     | 12.6 (S)  | 11.1      | 643                         | 611    |
| Petroleum and coal products                                      | 324                          | (D)                            | (D)     | (D)                  | (D)     | 1,172   | 1,057   | 353,210            | 311,244     | 2.8 (S)   | 2.8 (S)   | 191                         | 168    |
| Chemicals  | 325                          | 21,284                         | 17,892  | 157                  | 180     | 21,128  | 17,713  | 362,448            | 368,728     | 83.2 (S)  | 81.5      | 859                         | 838    |
| Basic chemicals  | 3251                         | 2,081                          | 1,876   | 31                   | 42      | 2,050   | 1,835   | 87,893             | 83,452      | 12.5  | 9.3       | 175                         | 169    |
| Resin, synthetic rubber, fibers, and filament                    | 3252                         | 2,874                          | (D)     | 11                   | (D)     | 2,863   | 2,745   | 50,886             | 60,396      | 10.0  | 11.1      | 127                         | 118    |
| Pharmaceuticals and medicines                                    | 3254                         | (D)                            | 10,137  | (D)                  | 0       | 12,854  | 10,137  | 134,595            | 130,287     | 43.1  | 39.6      | 315                         | 289    |
| Other chemicals  | 325 minus (3251-52, 3254)    | (D)                            | (D)     | (D)                  | (D)     | 3,360   | 2,996   | 89,074             | 94,593      | 17.6 (S)  | 21.5 (S)  | 243                         | 262    |
| Plastics and rubber products                                     | 326                          | (D)                            | (D)     | (D)                  | (D)     | 1,693   | 2,245   | 119,612            | 78,730      | 12.7  | 11.5      | 836                         | 451    |
| Nonmetallic mineral products                                     | 327                          | 886                            | 990     | 1                    | 11      | 886     | 978     | 49,359             | 41,766      | 7.6   | 6.9       | 242                         | 273    |
| Primary metals   | 331                          | 624                            | 485     | 26 (S)               | 6       | 598     | 479     | 122,752            | 72,413      | 4.6 (S)   | 4.7       | 358                         | 311    |
| Fabricated metal products  | 332                          | 1,939                          | 1,599   | 41                   | 54      | 1,898   | 1,545   | 123,006            | 94,141      | 10.9  | 10.1      | 679                         | 517    |
| Machinery  | 333                          | 6,766                          | 6,404   | 41                   | 67      | 6,725   | 6,337   | 176,210            | 150,306     | 53.9  | 55.9      | 794                         | 764    |
| Computer and electronic products                                 | 334                          | 46,369                         | 47,079  | 5,629                | 5,848   | 40,740  | 41,232  | 509,821            | 379,342     | 254.2 (S)   | 256.7 (S) | 1,658                       | 1,420  |
| Computers and peripheral equipment                               | 3341                         | 5,171                          | (D)     | 0                    | (D)     | 5,171   | 3,165   | 80,446             | 41,383      | 23.6  | 15.6      | 175                         | 112    |
| Communications equipment   | 3342                         | 12,539                         | 15,507  | 503                  | 298     | 12,036  | 15,209  | 119,416            | 91,381      | 85.0 (S)  | 90.6 (S)  | 426                         | 284    |
| Semiconductor and other electronic components                    | 3344                         | 12,919                         | 14,358  | 107                  | 148     | 12,812  | 14,210  | 172,663            | 135,597     | 65.4 (S)  | 83.3      | 494                         | 501    |
| Navigational, measuring, electromedical, and control instruments | 3345                         | 15,404                         | 12,947  | 5,016                | 5,382   | 10,388  | 7,565   | 129,980            | 102,942     | 78.0  | 63.5 (S)  | 538                         | 491    |
| Other computer and electronic products                           | 334 minus (3341-42, 3344-45) | 337                            | (D)     | 3                    | (D)     | 334     | 1,083   | 7,317              | 8,038       | 2.3   | 3.7       | 27                          | 32     |
| Electrical equipment, appliances, and components                 | 335                          | (D)                            | 4,980   | (D)                  | 301 (S) | 3,595   | 4,680   | 164,902            | 162,732 (S) | 24.3  | 33.6      | 520                         | 550    |
| Transportation equipment   | 336                          | 30,185                         | 25,965  | 7,168                | 4,961   | 23,017  | 21,004  | 750,644            | 625,167     | 109.0 (S)   | 99.5      | 2,057                       | 1,759  |
| Motor vehicles, trailers, and parts                              | 3361-63                      | (D)                            | (D)     | (D)                  | (D)     | 18,406  | 16,089  | 568,315            | 455,455     | 75.6  | 73.5      | 1,253                       | 1,065  |
| Aerospace products and parts                                     | 3364                         | 10,319                         | 7,868   | 6,424                | 3,785   | 3,895   | 4,083   | 141,548            | 137,052     | 25.1  | 19.1      | 587                         | 538    |
| Other transportation equipment                                   | 336 minus (3361-64)          | (D)                            | (D)     | (D)                  | (D)     | 716     | 832 (S) | 40,780             | 32,659      | 8.3 (S)   | 6.9 (S)   | 217                         | 157    |

See explanatory information and SOURCE at end of table.

Table A-2. Summary data for companies performing industrial R&amp;D in the U.S., by industry and size of company: 2000-2001

Page 2 of 3

| Industry and size of company                           | NAICS codes                               | Research and development funds |        |                      |       |         |        | Domestic net sales |           | R&D scientists and engineers (January) <sup>2</sup> |       | Domestic employment (March) |       |
|--|---|--------------------------------|--------|----------------------|-------|---------|--------|--------------------|-----------|---|-------|-----------------------------|-------|
|  |   | Total <sup>1</sup>             |        | Federal <sup>1</sup> |       | Company |        |                    |           | 2001  |       | 2000                        |       |
|  |   | 2000                           | 2001   | 2000                 | 2001  | 2000    | 2001   | 2001               | 2002      | 2000  | 2001  |                             |       |
|  |   | [In millions of dollars]       |        |                      |       |         |        |                    |           | [In thousands]                                      |       |                             |       |
| Distribution by industry:                              |   |                                |        |                      |       |         |        |                    |           |   |       |                             |       |
| Furniture and related products                         | 337                                       | 291                            | 301    | 0                    | 0     | 291     | 301    | 38,459             | 32,825    | 3.0   | 2.2   | 262                         | 247   |
| Miscellaneous manufacturing                            | 339                                       | 4,278                          | 6,606  | 14                   | 25    | 4,264   | 6,581  | 50,208             | 100,006   | 16.6  | 21.9  | 326                         | 431   |
| Medical equipment and supplies                         | 3391                                      | 3,787                          | (D)    | 12                   | (D)   | 3,776   | 5,903  | 29,233             | 65,846    | 12.3  | 15.7  | 206                         | 246   |
| Other miscellaneous manufacturing                      | 339 minus (3391)                          | 491                            | (D)    | 2                    | (D)   | 489     | 678    | 20,975             | 34,160    | 4.3   | 6.2   | 120                         | 185   |
| Other manufacturing                                    | 31-33 minus (311-16, 321-27, 331-37, 339) | --                             | --     | --                   | --    | --      | --     | --                 | --        | --  | --    | --                          | --    |
| Nonmanufacturing                                       | 21-23, 42, 44-81                          | 75,461                         | 77,799 | 5,790                | 5,415 | 69,671  | 72,384 | 1,844,364          | 1,822,202 | 432.5   | 444.4 | 6,652                       | 6,836 |
| Mining, extraction, and support activities             | 21  | 985                            | (D)    | 1                    | (D)   | 984     | 846    | 83,653             | 64,140    | 5.4   | 4.9   | 182                         | 113   |
| Utilities  | 22  | (D)                            | 133    | (D)                  | 19    | 136     | 114    | 232,802            | 274,151   | 0.6   | 0.6   | 392                         | 299   |
| Construction   | 23  | 241                            | 320    | 18                   | 1     | 222     | 320    | 12,162             | 22,822    | 0.9   | 2.1   | 62                          | 99    |
| Trade  | 42, 44, 45                                | 25,132                         | 24,372 | 30                   | 88    | 25,101  | 24,284 | 468,717            | 393,367   | 100.8   | 114.3 | 1,313                       | 1,562 |
| Transportation and warehousing                         | 48, 49                                    | (D)                            | 1,848  | (D)                  | 72    | 277     | 1,776  | 89,405             | 72,515    | 1.9   | 0.7   | 681                         | 650   |
| Information  | 51  | 17,000                         | (D)    | 540 (S)              | (D)   | 16,460  | 17,259 | 407,845            | 388,770   | 118.1   | 119.4 | 1,565                       | 1,493 |
| Publishing   | 511                                       | 13,174                         | 13,760 | 78                   | 44    | 13,096  | 13,716 | 80,469             | 91,172    | 87.7  | 86.7  | 354                         | 392   |
| Newspaper, periodical, book, and database              | 5111                                      | 365                            | 649    | 0                    | 0     | 365     | 649    | 18,015             | 23,620    | 3.6   | 5.5   | 117                         | 145   |
| Software   | 5112                                      | 12,809                         | 13,111 | 78                   | 44    | 12,731  | 13,067 | 62,455             | 67,552    | 84.1  | 81.1  | 237                         | 247   |
| Broadcasting and telecommunications                    | 513                                       | 1,407                          | (D)    | 382 (S)              | (D)   | 1,025   | 1,270  | 279,983            | 249,287   | 12.0 (S)  | (D)   | 1,018                       | (D)   |
| Radio and television broadcasting                      | 5131                                      | (D)                            | (D)    | (D)                  | 0     | (D)     | (D)    | (D)                | (D)       | (D)   | (D)   | (D)                         | (D)   |
| Telecommunications                                     | 5133                                      | (D)                            | (D)    | (D)                  | (D)   | (D)     | 1,101  | 272,351            | 234,848   | (D)   | 11.7  | 972                         | 827   |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)                    | 59                             | (D)    | 0                    | 0     | 59      | (D)    | (D)                | (D)       | 0.2   | (D)   | (D)                         | (D)   |
| Other information                                      | 51 minus (511, 513)                       | 2,420                          | (D)    | 81                   | (D)   | 2,339   | 2,273  | 47,392             | 48,311    | 18.4  | (D)   | 193                         | (D)   |
| Finance, insurance, and real estate                    | 52, 53                                    | 4,025                          | (D)    | 0                    | (D)   | 4,024   | 2,424  | 335,868            | 323,250   | 20.5  | 19.9  | 829                         | 789   |
| Professional, scientific, and technical services       | 54  | 26,036                         | 27,704 | 5,104                | 5,065 | 20,932  | 22,640 | 124,342            | 165,299   | 172.5   | 152.9 | 756                         | 900   |
| Architectural, engineering, and related services       | 5413                                      | 3,632                          | 3,386  | 1,186                | 1,021 | 2,445   | 2,365  | 33,299             | 45,221    | 36.8  | 23.7  | 174                         | 225   |
| Computer systems design and related services           | 5415                                      | 7,141                          | 9,154  | 389                  | 498   | 6,753   | 8,656  | 42,857             | 52,466    | 62.2  | 62.8  | 278                         | 290   |
| Scientific R&D services                                | 5417                                      | 14,018                         | 14,244 | 3,452                | 3,352 | 10,566  | 10,893 | 30,696             | 29,858    | 64.3  | 59.9  | 165                         | 164   |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417)               | 1,245                          | 920    | 77                   | 194   | 1,168   | 726    | 17,489             | 37,753    | 9.2   | 6.5   | 139                         | 221   |
| Management of companies and enterprises                | 55  | 49                             | 381    | 0                    | 0     | 49      | 381    | 1,124              | 4,862     | 0.3   | 1.5   | 3                           | 26    |
| Health care services                                   | 621-23                                    | 632                            | 1,149  | 59                   | 29    | 573     | 1,120  | 17,677             | 27,200    | 4.6   | 8.1   | 156                         | 156   |
| Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81                   | 929                            | 1,259  | 18                   | 38    | 911     | 1,221  | 70,769             | 85,826    | 6.8   | 20.0  | 714                         | 748   |

See explanatory information and SOURCE at end of table.

Table A-2. Summary data for companies performing industrial R&amp;D in the U.S., by industry and size of company: 2000-2001

Page 3 of 3

Page 6 of 10

| Industry and size of company                              |  | Research and development funds |         |                      |        |         |         | Domestic net sales |           | R&D scientists and engineers (January) <sup>2</sup> |           | Domestic employment (March) |        |
|---|--|--------------------------------|---------|----------------------|--------|---------|---------|--------------------|-----------|---|-----------|-----------------------------|--------|
|   |  | Total <sup>1</sup>             |         | Federal <sup>1</sup> |        | Company |         |                    |           | (January) <sup>2</sup>                              |           | (March)                     |        |
|   |  | 2000                           | 2001    | 2000                 | 2001   | 2000    | 2001    | 2000               | 2001      | 2001  | 2002      | 2000                        | 2001   |
|   |  | [In millions of dollars]       |         |                      |        |         |         | [In thousands]     |           |   |           |                             |        |
| Distribution by size of company:<br>[Number of employees] |  |                                |         |                      |        |         |         |                    |           |   |           |                             |        |
| Total   |  | 199,539                        | 198,505 | 19,118               | 16,899 | 180,421 | 181,606 | 5,249,573          | 4,835,140 | 1,041.0   | 1,060.2   | 17,663                      | 16,749 |
| 5 to 24   |  | 6,862                          | 4,828   | 922                  | 653    | 5,940   | 4,175   | 34,562             | 32,242    | 53.6  | 34.4      | 182                         | 159    |
| 25 to 49  |  | 5,008                          | 3,750   | 222                  | 201    | 4,786   | 3,548   | 35,717             | 33,507    | 32.3  | 26.7      | 180                         | 178    |
| 50 to 99  |  | 7,259                          | 8,202   | 514                  | 548    | 6,745   | 7,654   | 60,164             | 73,288    | 35.8  | 40.4      | 324                         | 360    |
| 100 to 249  |  | 9,020                          | 12,916  | 669                  | 903    | 8,351   | 12,012  | 104,013            | 111,392   | 55.6  | 79.9      | 594                         | 639    |
| 250 to 499  |  | 7,479                          | 8,702   | 660                  | 560    | 6,819   | 8,143   | 110,989            | 101,466   | 45.7  | 47.6      | 579                         | 520    |
| 500 to 999  |  | 9,074                          | 10,564  | 495                  | 627    | 8,580   | 9,936   | 182,179            | 175,292   | 66.7  | 61.9      | 723                         | 814    |
| 1,000 to 4,999  |  | 30,636                         | 26,748  | 775                  | 608    | 29,860  | 26,140  | 844,513            | 627,725   | 154.3   | 159.1     | 3,120                       | 2,333  |
| 5,000 to 9,999  |  | 16,768                         | 17,487  | 1,625                | 1,651  | 15,143  | 15,836  | 702,858            | 635,660   | 107.3 (S)   | 110.6 (S) | 1,830                       | 1,772  |
| 10,000 to 24,999  |  | 28,653                         | 27,065  | 678                  | 904    | 27,976  | 26,161  | 890,004            | 753,055   | 151.6   | 144.3     | 2,730                       | 2,397  |
| 25,000 or more  |  | 78,779                         | 78,244  | 12,559               | 10,243 | 66,221  | 68,001  | 2,284,573          | 2,291,513 | 338.4 (S)   | 355.2     | 7,400                       | 7,577  |

<sup>1</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).<sup>2</sup> Data recorded in January represent employment figures for the previous year.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.  
(S) = Indicates imputation of more than 50 percent.  
(-) = Indicates data not collected.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-3. Total (Federal plus company and other) funds for industrial R&D performance in the U.S.,  
by industry and size of company: 1999-2001

Page 1 of 3

Page 1 of 1

| Industry and size of company                                     | NAICS codes                               | 1999 <sup>1</sup>   | 2000    | 2001 <sup>2</sup> |
|--|---|---------------------|---------|-------------------|
|  |   | Millions of dollars |         |                   |
| Distribution by industry:  |   |                     |         |                   |
| All industries   | 21-23, 31-33, 42, 44-81                   | 182,711             | 199,539 | 198,505           |
| Manufacturing  | 31-33                                     | 116,921             | 124,078 | 120,705           |
| Food   | 311                                       | 1,132               | (D)     | 1,819             |
| Beverage and tobacco products                                    | 312                                       | (D)                 | 417     | 152               |
| Textiles, apparel, and leather                                   | 313-16                                    | 334                 | (D)     | (D)               |
| Wood products  | 321                                       | 70                  | 105     | 182               |
| Paper, printing and support activities                           | 322, 323                                  | (D)                 | (D)     | (D)               |
| Petroleum and coal products                                      | 324                                       | 615                 | (D)     | (D)               |
| Chemicals  | 325                                       | 20,246              | 20,918  | 17,892            |
| Basic chemicals  | 3251                                      | 2,746               | 2,080   | 1,876             |
| Resin, synthetic rubber, fibers, and filament                    | 3252                                      | (D)                 | 2,852   | (D)               |
| Pharmaceuticals and medicines                                    | 3254                                      | (D)                 | (D)     | 10,137            |
| Other chemicals  | 325 minus (3251-52, 3254)                 | (D)                 | (D)     | (D)               |
| Plastics and rubber products                                     | 326                                       | 1,785               | (D)     | (D)               |
| Nonmetallic mineral products                                     | 327                                       | (D)                 | 846     | 990               |
| Primary metals   | 331                                       | 470                 | 624     | 485               |
| Fabricated metal products  | 332                                       | 1,655               | 1,672   | 1,599             |
| Machinery  | 333                                       | 6,057               | 6,580   | 6,404             |
| Computer and electronic products                                 | 334                                       | 35,932              | 45,097  | 47,079            |
| Computers and peripheral equipment                               | 3341                                      | (D)                 | 5,162   | (D)               |
| Communications equipment   | 3342                                      | 6,003               | 11,616  | 15,507            |
| Semiconductor and other electronic components                    | 3344                                      | 10,701              | 12,894  | 14,358            |
| Navigational, measuring, electromedical, and control instruments | 3345                                      | 14,337              | 15,116  | 12,947            |
| Other computer and electronic products                           | 334 minus (3341-42, 3344-45)              | (D)                 | 310     | (D)               |
| Electrical equipment, appliances, and components                 | 335                                       | (D)                 | (D)     | 4,980             |
| Transportation equipment   | 336                                       | 33,965              | 30,085  | 25,965            |
| Motor vehicles, trailers, and parts                              | 3361-63                                   | (D)                 | (D)     | (D)               |
| Aerospace products and parts                                     | 3364                                      | 14,425              | 10,319  | 7,868             |
| Other transportation equipment                                   | 336 minus (3361-64)                       | (D)                 | (D)     | (D)               |
| Furniture and related products                                   | 337                                       | 248                 | 284     | 301               |
| Miscellaneous manufacturing                                      | 339                                       | 3,851               | 4,206   | 6,606             |
| Medical equipment and supplies                                   | 3391                                      | (D)                 | (D)     | (D)               |
| Other miscellaneous manufacturing                                | 339 minus (3391)                          | (D)                 | (D)     | (D)               |
| Other manufacturing  | 31-33 minus (311-16, 321-27, 331-37, 339) | --                  | --      | --                |

See explanatory information and SOURCE at end of table.



Table A-3. Total (Federal plus company and other) funds for industrial R&D performance in the U.S.,  
by industry and size of company: 1999-2001

Page 2 of 3

Page 2 of 3

| Industry and size of company                           | NAICS codes                 | 1999 <sup>1</sup>   | 2000      | 2001 <sup>2</sup> |
|--|-----------------------------|---------------------|-----------|-------------------|
|  |                             | Millions of dollars |           |                   |
| Distribution by industry:                              |                             |                     |           |                   |
| Nonmanufacturing                                       | 21-23, 42, 44-81            | 65,790              | 75,461    | 77,799            |
| Mining, extraction, and support activities             | 21                          | (D)                 | 823       | (D)               |
| Utilities  | 22                          | 142                 | (D)       | 133               |
| Construction   | 23                          | 691                 | (D)       | 320               |
| Trade  | 42, 44, 45                  | 19,616              | 24,959    | 24,372            |
| Transportation and warehousing                         | 48, 49                      | 460                 | (D)       | 1,848             |
| Information  | 51                          | 15,389              | 16,830    | (D)               |
| Publishing   | 511                         | 11,302              | 13,004    | 13,760            |
| Newspaper, periodical, book, and database              | 5111                        | 371                 | 365       | 649               |
| Software   | 5112                        | 10,931              | 12,639    | 13,111            |
| Broadcasting and telecommunications                    | 513                         | (D)                 | 1,407 (S) | (D)               |
| Radio and television broadcasting                      | 5131                        | (D)                 | (D)       | (D)               |
| Telecommunications                                     | 5133                        | (D)                 | (D)       | (D)               |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)      | 31                  | 59        | (D)               |
| Other information                                      | 51 minus (511, 513)         | (D)                 | 2,420     | (D)               |
| Finance, insurance, and real estate                    | 52, 53                      | (D)                 | 4,025     | (D)               |
| Professional, scientific, and technical services       | 54                          | 18,994              | 22,577    | 27,704            |
| Architectural, engineering, and related services       | 5413                        | 3,580               | 3,381     | 3,386             |
| Computer systems design and related services           | 5415                        | (D)                 | 5,169     | 9,154             |
| Scientific R&D services                                | 5417                        | 10,470              | 12,892    | 14,244            |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417) | (D)                 | 1,135     | 920               |
| Management of companies and enterprises                | 55                          | (D)                 | 49        | 381               |
| Health care services                                   | 621-23                      | 642                 | 536       | 1,149             |
| Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81     | (D)                 | 731       | 1,259             |

See explanatory information and SOURCE at end of table.

**Table A-3. Total (Federal plus company and other) funds for industrial R&D performance in the U.S., by industry and size of company: 1999-2001**

Page 3 of 3

| Industry and size of company                             |  | 1999 <sup>1</sup>   | 2000    | 2001 <sup>2</sup> |
|--|--|---------------------|---------|-------------------|
|  |  | Millions of dollars |         |                   |
| Distribution by size of company<br>(Number of employees) |  |                     |         |                   |
| Total  |  | 182,711             | 199,539 | 198,505           |
| 5 to 24  |  | 7,004               | 6,862   | 4,828             |
| 25 to 49   |  | 4,750               | 5,008   | 3,750             |
| 50 to 99   |  | 7,225               | 7,259   | 8,202             |
| 100 to 249   |  | 7,213               | 9,020   | 12,916            |
| 250 to 499   |  | 7,892               | 7,479   | 8,702             |
| 500 to 999   |  | 7,032               | 9,074   | 10,564            |
| 1,000 to 4,999   |  | 24,840              | 30,636  | 26,748            |
| 5,000 to 9,999   |  | 16,376              | 16,768  | 17,487            |
| 10,000 to 24,999   |  | 24,922              | 28,653  | 27,065            |
| 25,000 or more   |  | 75,457              | 78,779  | 78,244            |

<sup>1</sup> Some statistics for 1999 have been revised since originally published.

<sup>2</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.  
(S) = Indicates imputation of more than 50 percent.  
(--) = Indicates data not collected.

NOTES: The R&D in this table is the industrial R&D performed within company facilities funded from all sources. The funds are the company's own; funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and State governments; and funds from the Federal Government. Excluded from this table are R&D not performed within the company (e.g., R&D contracted out to other organizations) and R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations).

For 1999, 2000, and 2001, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. For 1999 and 2000, statistics previously published for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-4. Total (Federal plus company and other) funds for industrial R&amp;D performance in the U.S., by industry, by size of company: 2001

| Industry   | NAICS codes                               | Total <sup>1</sup> | Size of company (number of employees) |       |       |        |        |        |          |          |           |           |
|--|---|--------------------|---------------------------------------|-------|-------|--------|--------|--------|----------|----------|-----------|-----------|
|  |   |                    | 5 to                                  | 25 to | 50 to | 100 to | 250 to | 500 to | 1,000 to | 5,000 to | 10,000 to | 25,000    |
|  |   |                    | 24                                    | 49    | 99    | 249    | 499    | 999    | 4,999    | 9,999    | 24,999    | or more   |
| Millions of dollars  |   |                    |                                       |       |       |        |        |        |          |          |           |           |
| Distribution by industry:  |   |                    |                                       |       |       |        |        |        |          |          |           |           |
| All industries   | 21-23, 31-33, 42, 44-81                   | 198,505            | 4,828                                 | 3,750 | 8,202 | 12,916 | 8,702  | 10,564 | 26,748   | 17,487   | 27,065    | 78,244    |
| Manufacturing  | 31-33                                     | 120,705            | 973                                   | 1,123 | 3,924 | 4,817  | 3,345  | 5,290  | 15,828   | 10,918   | 15,647    | 58,840    |
| Food   | 311                                       | 1,819              | 4                                     | 28    | 40    | 18     | 57     | 128    | 281      | 55       | 345       | 863       |
| Beverage and tobacco products                                    | 312                                       | 152                | 0                                     | 0     | 0     | 0      | 0      | (D)    | 37       | 91       | (D)       | 0         |
| Textiles, apparel, and leather                                   | 313-16                                    | (D)                | 26                                    | (D)   | 6     | 2      | 27     | 19     | 123      | (D)      | 51        | 0         |
| Wood products  | 321                                       | 182                | 56                                    | 0     | 4     | 1      | 4      | (D)    | 24       | 29       | (D)       | 0         |
| Paper, printing and support activities                           | 322, 323                                  | (D)                | 2                                     | 15    | 35    | 12     | 58     | (D)    | 80       | 93       | 377       | 2,016     |
| Petroleum and coal products                                      | 324                                       | (D)                | 0                                     | 0     | 0     | 0      | 6      | 5      | 7        | (D)      | 2         | 955       |
| Chemicals  | 325                                       | 17,892             | 213                                   | 427   | 499   | 135    | 146    | 588    | 2,627    | 2,658    | 4,644     | 5,955     |
| Basic chemicals  | 3251                                      | 1,876              | 32                                    | 28    | 144   | 77     | 36     | 221    | 695      | 345      | 299       | 0         |
| Resin, synthetic rubber, fibers, and filament                    | 3252                                      | (D)                | 0                                     | 0     | 161   | (D)    | (D)    | 105    | 200      | 344      | (D)       | (D)       |
| Pharmaceuticals and medicines                                    | 3254                                      | 10,137             | 2                                     | 392   | 115   | (D)    | (D)    | 177    | 983      | 1,055    | 3,588     | 3,780     |
| Other chemicals  | 325 minus (3251-52, 3254)                 | (D)                | 179                                   | 7     | 79    | 30     | 83     | 85     | 749      | 915      | (D)       | (D)       |
| Plastics and rubber products                                     | 326                                       | (D)                | 1                                     | 0     | 25    | 73     | 967    | 228    | 345      | 141      | 126       | (D)       |
| Nonmetallic mineral products                                     | 327                                       | 990                | 23                                    | 28    | 0     | 28     | 515    | 15     | 130      | 59 (S)   | 190       | 0         |
| Primary metals   | 331                                       | 485                | 28                                    | (D)   | 3     | 11     | 9      | 38     | 105      | 40       | 44        | (D)       |
| Fabricated metal products  | 332                                       | 1,599              | 66                                    | (D)   | 51    | 93     | 56     | 109    | 210      | 172      | 236       | (D)       |
| Machinery  | 333                                       | 6,404              | 102                                   | 68    | 221   | 194    | 250    | 549    | 1,490    | 637      | 1,674     | 1,218     |
| Computer and electronic products                                 | 334                                       | 47,079             | 287                                   | 360   | 2,908 | 2,353  | 826    | 2,815  | 7,730    | 5,148    | 4,959     | 19,694    |
| Computers and peripheral equipment                               | 3341                                      | (D)                | 30                                    | (D)   | 47    | 290    | 163    | 350    | (D)      | 1,590    | 472       | 0         |
| Communications equipment   | 3342                                      | 15,507             | 82                                    | 0     | 1,419 | 694    | 281    | 1,566  | 1,165    | (D)      | (D)       | (D)       |
| Semiconductor and other electronic components                    | 3344                                      | 14,358             | 0                                     | 270   | 784   | 212    | 191    | 354    | 4,724    | 1,017    | 2,449     | 4,358     |
| Navigational, measuring, electromedical, and control instruments | 3345                                      | 12,947             | 175                                   | 83    | 635   | 374    | 148    | 503    | 1,474    | 1,270    | 1,724     | 6,560     |
| Other computer and electronic products                           | 334 minus (3341-42, 3344-45)              | (D)                | 0                                     | (D)   | 23    | 784    | 43     | 42     | (D)      | (D)      | (D)       | (D)       |
| Electrical equipment, appliances, and components                 | 335                                       | 4,980              | 4                                     | 96    | 35    | 1,564  | (D)    | 211    | 445      | 176      | 765       | 1,656 (S) |
| Transportation equipment   | 336                                       | 25,965             | 42                                    | 0     | 41    | 13     | 180    | 402    | 631      | 801      | 1,195     | 22,661    |
| Motor vehicles, trailers, and parts                              | 3361-63                                   | (D)                | 41                                    | 0     | 26    | 0      | 102    | (D)    | 487      | 311      | (D)       | 15,529    |
| Aerospace products and parts                                     | 3364                                      | 7,868              | 0                                     | 0     | 15    | 13     | 0      | (D)    | 58       | 367      | (D)       | (D)       |
| Other transportation equipment                                   | 336 minus (3361-64)                       | (D)                | 1                                     | 0     | 0     | 0      | 77     | 20     | 86       | 122      | 405 (S)   | (D)       |
| Furniture and related products                                   | 337                                       | 301                | 0                                     | 0     | 1     | 14     | 22     | 28     | 46       | (D)      | 83        | (D)       |
| Miscellaneous manufacturing                                      | 339                                       | 6,606              | 120                                   | 91    | 54    | 305    | 194    | 151    | 1,517    | (D)      | 872       | (D)       |
| Medical equipment and supplies                                   | 3391                                      | (D)                | 103                                   | 85    | 21    | 241    | 162    | 115    | 1,227    | 635      | (D)       | (D)       |
| Other miscellaneous manufacturing                                | 339 minus (3391)                          | (D)                | 17                                    | 6     | 33    | 64     | 32     | 36     | 290      | (D)      | (D)       | (D)       |
| Other manufacturing  | 31-33 minus (311-16, 321-27, 331-37, 339) | --                 | --                                    | --    | --    | --     | --     | --     | --       | --       | --        | --        |

See explanatory information and SOURCE at end of table.

Table A-4. Total (Federal plus company and other) funds for industrial R&amp;D performance in the U.S., by industry, by size of company: 2001

Page 2 of 3

| Industry   | NAICS codes                 | Total <sup>1</sup>  | Size of company [number of employees] |          |          |            |            |            |                |                |                  |                |
|--|-----------------------------|---------------------|---------------------------------------|----------|----------|------------|------------|------------|----------------|----------------|------------------|----------------|
|  |                             |                     | 5 to 24                               | 25 to 49 | 50 to 99 | 100 to 249 | 250 to 499 | 500 to 999 | 1,000 to 4,999 | 5,000 to 9,999 | 10,000 to 24,999 | 25,000 or more |
|  |                             | Millions of dollars |                                       |          |          |            |            |            |                |                |                  |                |
| Distribution by industry:                              |                             |                     |                                       |          |          |            |            |            |                |                |                  |                |
| Nonmanufacturing                                       | 21-23, 42, 44-81            | 77,799              | 3,855                                 | 2,627    | 4,278    | 8,099      | 5,357      | 5,273      | 10,919         | 6,569          | 11,418           | 19,404         |
| Mining, extraction, and support activities             | 21                          | (D)                 | 0                                     | 4        | 0        | 0          | (D)        | 13         | 54             | 95             | (D)              | (D)            |
| Utilities  | 22                          | 133                 | 0                                     | 0        | 0        | 1          | (D)        | (D)        | 28             | 39             | 32               | (D)            |
| Construction   | 23                          | 320                 | 81                                    | 2        | 0        | 4          | 91 (S)     | (D)        | (D)            | (D)            | 108              | 0              |
| Trade  | 42, 44, 45                  | 24,372              | 274                                   | 52       | 198      | 717        | 236        | 512        | 2,715          | 3,632          | 6,311            | 9,725          |
| Transportation and warehousing                         | 48, 49                      | 1,848               | 1,439                                 | 2        | (D)      | (D)        | 0          | (D)        | 25             | 0              | (D)              | 363            |
| Information  | 51                          | (D)                 | 207                                   | 334      | 518      | 808        | 1,129      | 1,252      | 3,926          | (D)            | 2,304            | 6,656          |
| Publishing   | 511                         | 13,760              | 206                                   | 272      | 430      | 670        | (D)        | 989        | 3,617          | (D)            | (D)              | (D)            |
| Newspaper, periodical, book, and database              | 5111                        | 649                 | 24                                    | 58       | 1        | 0          | (D)        | 0          | 377            | 0              | 36               | (D)            |
| Software   | 5112                        | 13,111              | 182                                   | 214      | 429      | 670        | 903        | 989        | 3,240          | (D)            | (D)              | (D)            |
| Broadcasting and telecommunications                    | 513                         | (D)                 | 2                                     | 0        | 0        | 0          | (D)        | 115        | 168            | 0              | (D)              | 907            |
| Radio and television broadcasting                      | 5131                        | (D)                 | 0                                     | 0        | 0        | 0          | 0          | 0          | (D)            | 0              | 24               | 0              |
| Telecommunications                                     | 5133                        | (D)                 | 2                                     | 0        | 0        | 0          | (D)        | 115        | (D)            | 0              | (D)              | 907            |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)      | (D)                 | 0                                     | 0        | 0        | 0          | (D)        | 0          | 0              | 0              | 0                | 0              |
| Other information                                      | 51 minus (511, 513)         | (D)                 | 0                                     | 62       | 88       | 138        | 177        | 148        | 141            | (D)            | 392              | (D)            |
| Finance, insurance, and real estate                    | 52, 53                      | (D)                 | 12                                    | 0        | (D)      | 55         | 622        | 18         | 391            | 100            | 587              | 654            |
| Professional, scientific, and technical services       | 54                          | 27,704              | 1,392                                 | 2,148    | 2,954    | 5,989      | 3,207      | 3,333      | 3,460          | 2,200          | (D)              | (D)            |
| Architectural, engineering, and related services       | 5413                        | 3,386               | 272                                   | 210      | 522      | 374        | 297        | (D)        | 1,206          | 104            | (D)              | (D)            |
| Computer systems design and related services           | 5415                        | 9,154               | 308                                   | 633      | 1,140    | 2,041      | 816        | 904        | 1,251          | 449            | (D)              | (D)            |
| Scientific R&D services                                | 5417                        | 14,244              | 522                                   | 1,133    | 1,289    | 3,429      | 2,064      | 1,962      | 971            | (D)            | 0                | (D)            |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417) | 920                 | 291                                   | 173      | 2        | 144        | 30 (S)     | (D)        | 32             | (D)            | (D)              | (D)            |
| Management of companies and enterprises                | 55                          | 381                 | 60                                    | (D)      | 138      | (D)        | 0          | 74         | (D)            | 0              | 0                | 0              |
| Health care services                                   | 621-23                      | 1,149               | 315                                   | 8        | 460      | 3          | 17         | 36         | 40             | (D)            | (D)              | (D)            |
| Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81     | 1,259               | 75                                    | (D)      | 1        | 507        | 49         | 20         | 174            | (D)            | 39 (S)           | 280            |

<sup>1</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

(-) = Indicates data not collected.

NOTE: Starting in 1999, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. Statistics for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

TABLE A-5. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. and number of companies that performed R&D in the U.S., by industry and size of company, by size of total R&D program: 2001

Page 1 of 3

| Industry and size of company  | NAICS codes                  | Total<br>number of<br>companies | Total<br>amount <sup>1</sup><br>[Millions<br>of dollars] | Size of R&D program    |                                    |                           |                                    |                                 |                                    |                                   |                                    |                          |                                    |
|---|------------------------------|---------------------------------|--|------------------------|------------------------------------|---------------------------|------------------------------------|---------------------------------|------------------------------------|-----------------------------------|------------------------------------|--------------------------|------------------------------------|
|   |                              |                                 |  | Less than<br>\$200,000 |                                    | \$200,000 to<br>\$999,999 |                                    | \$1 million to<br>\$9.9 million |                                    | \$10 million to<br>\$99.9 million |                                    | \$100 million or<br>more |                                    |
|   |                              |                                 |  | Number of<br>companies | Amount<br>[Millions<br>of dollars] | Number of<br>companies    | Amount<br>[Millions<br>of dollars] | Number of<br>companies          | Amount<br>[Millions<br>of dollars] | Number of<br>companies            | Amount<br>[Millions<br>of dollars] | Number of<br>companies   | Amount<br>[Millions<br>of dollars] |
| Distribution by industry:   |                              |                                 |  |                        |                                    |                           |                                    |                                 |                                    |                                   |                                    |                          |                                    |
| All industries  | 21-23, 31-33, 42, 44-81      | 33,263                          | 198,505  | 17,318                 | 1,053                              | 8,102                     | 3,598                              | 5,818                           | 18,525                             | 1,783                             | 43,298                             | 243                      | 132,031                            |
| Manufacturing   | 31-33                        | 16,817                          | 120,705  | 8,512                  | 619                                | 4,856                     | 2,125                              | 2,307                           | 6,788                              | 991                               | 22,507                             | 151                      | 88,667                             |
| Food  | 311                          | 969                             | 1,819  | 514                    | 10                                 | 334                       | 145                                | 99                              | 310                                | 19                                | 667                                | 3                        | 687                                |
| Beverage and tobacco products                                       | 312                          | 12                              | 152  | 1                      | 0                                  | 2                         | 2                                  | 3                               | 15                                 | 5                                 | 135                                | 0                        | 0                                  |
| Textiles, apparel, and leather                                      | 313-16                       | 514                             | (D)  | 411                    | 31                                 | 64                        | 32                                 | 33                              | 114                                | 6                                 | 80                                 | 0                        | (D)                                |
| Wood products   | 321                          | 177                             | 182  | 62                     | 5                                  | 104                       | 58                                 | 7                               | 16                                 | 4                                 | 103                                | 0                        | 0                                  |
| Paper, printing and support activities                              | 322, 323                     | 495                             | (D)  | 221                    | (D)                                | 200                       | 47                                 | 57                              | 97                                 | 15                                | 417                                | 3                        | 2,112                              |
| Petroleum and coal products   | 324                          | 27                              | (D)  | 0                      | (D)                                | 14                        | 6                                  | 6                               | 13                                 | 3                                 | 85                                 | 3                        | 955                                |
| Chemicals   | 325                          | 1,877                           | 17,892   | 793                    | (D)                                | 464                       | 203                                | 506                             | (D)                                | 89                                | 2,944                              | 25                       | 13,388                             |
| Basic chemicals   | 3251                         | 523                             | 1,876  | 111                    | (D)                                | 239                       | 71                                 | 139                             | (D)                                | 30                                | (D)                                | 3                        | 400                                |
| Resin, synthetic rubber, fibers,<br>and filament                    | 3252                         | 66                              | (D)  | 0                      | (D)                                | 0                         | 0                                  | 48                              | 170                                | 14                                | 361                                | 4                        | 2,227                              |
| Pharmaceuticals and medicines                                       | 3254                         | 347                             | 10,137   | 100                    | 2                                  | 49                        | 21                                 | 163                             | 492                                | 22                                | 700                                | 13                       | 8,921                              |
| Other chemicals   | 325 minus (3251-52, 3254)    | 941                             | (D)  | 582                    | (D)                                | 175                       | 111                                | 156                             | (D)                                | 23                                | (D)                                | 5                        | 1,840                              |
| Plastics and rubber products  | 326                          | 811                             | (D)  | 537                    | 39                                 | 157                       | 74                                 | 83                              | (D)                                | 25                                | 560                                | 9                        | 1,304                              |
| Nonmetallic mineral products  | 327                          | 464                             | 990  | 266                    | 42                                 | 136                       | 44                                 | 26                              | 53                                 | 36                                | (D)                                | 1                        | (D)                                |
| Primary metals  | 331                          | 427                             | 485  | 253                    | 15                                 | 131                       | 33                                 | 33                              | 106                                | 9                                 | (D)                                | 1                        | (D)                                |
| Fabricated metal products   | 332                          | 1,393                           | 1,599  | 968                    | 85                                 | 300                       | 129                                | 107                             | 295                                | 18                                | (D)                                | 1                        | (D)                                |
| Machinery   | 333                          | 2,489                           | 6,404  | 1,445                  | 120                                | 714                       | 264                                | 247                             | 728                                | 73                                | (D)                                | 11                       | (D)                                |
| Computer and electronic products                                    | 334                          | 3,230                           | 47,079   | 757                    | 55                                 | 1,306                     | 622                                | 641                             | 1,710                              | 469                               | 9,653                              | 57                       | 35,039                             |
| Computers and peripheral equipment                                  | 3341                         | 238                             | (D)  | 13                     | 1                                  | 152                       | 71                                 | 24                              | 109                                | 44                                | (D)                                | 5                        | 2,004                              |
| Communications equipment  | 3342                         | 580                             | 15,507   | 141                    | 19                                 | 107                       | 62                                 | 114                             | 359                                | 206                               | (D)                                | 13                       | (D)                                |
| Semiconductor and other electronic<br>components                    | 3344                         | 735                             | 14,358   | 247                    | 15                                 | 147                       | 58                                 | 221                             | 467                                | 96                                | (D)                                | 24                       | (D)                                |
| Navigational, measuring, electromedical,<br>and control instruments | 3345                         | 1,538                           | 12,947   | 348                    | 19                                 | 843                       | 397                                | 266                             | 714                                | 65                                | 1,492                              | 15                       | 10,325                             |
| Other computer and electronic products                              | 334 minus (3341-42, 3344-45) | 139                             | (D)  | 8                      | 1                                  | 57                        | 34                                 | 16                              | 61                                 | 57                                | (D)                                | 1                        | (D)                                |
| Electrical equipment, appliances,<br>and components                 | 335                          | 1,012                           | 4,980  | 382                    | (D)                                | 387                       | 174                                | 100                             | 547                                | 138                               | 1,971                              | 5                        | (D)                                |
| Transportation equipment  | 336                          | 1,015                           | 25,965   | 696                    | 61                                 | 101                       | 43                                 | 159                             | 564                                | 38                                | 1,399                              | 21                       | 23,899                             |
| Motor vehicles, trailers, and parts                                 | 3361-63                      | 648                             | (D)  | 400                    | 49                                 | 100                       | (D)                                | 113                             | (D)                                | 26                                | 922                                | 10                       | 15,742                             |
| Aerospace products and parts  | 3364                         | 115                             | 7,868  | 97                     | 11                                 | 0                         | 0                                  | 4                               | (D)                                | 6                                 | (D)                                | 8                        | 7,570                              |
| Other transportation equipment                                      | 336 minus (3361-64)          | 252                             | (D)  | 200                    | 1                                  | 1                         | (D)                                | 42                              | 112                                | 6                                 | (D)                                | 3                        | 587                                |

See explanatory information and SOURCE at end of table.

TABLE A-5. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. and number of companies that performed R&D in the U.S., by industry and size of company, by size of total R&D program: 2001

| Industry and size of company                           | NAICS codes                               | Total number of companies | Total amount <sup>1</sup> [Millions of dollars] | Size of R&D program |                              |                        |                              |                              |                              |                                |                              |                       |                              |
|--|---|---------------------------|---|---------------------|------------------------------|------------------------|------------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|-----------------------|------------------------------|
|  |   |                           |   | Less than \$200,000 |                              | \$200,000 to \$999,999 |                              | \$1 million to \$9.9 million |                              | \$10 million to \$99.9 million |                              | \$100 million or more |                              |
|  |   |                           |   | Number of companies | Amount [Millions of dollars] | Number of companies    | Amount [Millions of dollars] | Number of companies          | Amount [Millions of dollars] | Number of companies            | Amount [Millions of dollars] | Number of companies   | Amount [Millions of dollars] |
| Distribution by industry:                              |   |                           |   |                     |                              |                        |                              |                              |                              |                                |                              |                       |                              |
| Furniture and related products                         | 337                                       | 324                       | 301   | 220                 | 14                           | 65                     | 33                           | 33                           | 75                           | 7                              | 180                          | 0                     | 0                            |
| Miscellaneous manufacturing                            | 339                                       | 1,580                     | 6,606   | 987                 | 53                           | 378                    | 216                          | 167                          | 576                          | 38                             | 964                          | 10                    | 4,797                        |
| Medical equipment and supplies                         | 3391                                      | 737                       | (D)   | 391                 | 35                           | 202                    | 134                          | 108                          | 436                          | 27                             | 655                          | 9                     | (D)                          |
| Other miscellaneous manufacturing                      | 339 minus (3391)                          | 843                       | (D)   | 596                 | 18                           | 176                    | 81                           | 59                           | 140                          | 11                             | 309                          | 1                     | (D)                          |
| Other manufacturing                                    | 31-33 minus (311-16, 321-27, 331-37, 339) | --                        | --  | --                  | --                           | --                     | --                           | --                           | --                           | --                             | --                           | --                    | --                           |
| Nonmanufacturing                                       | 21-23, 42, 44-81                          | 16,446                    | 77,799  | 8,806               | 434                          | 3,245                  | 1,473                        | 3,511                        | 11,737                       | 791                            | 20,791                       | 92                    | 43,364                       |
| Mining, extraction, and support activities             | 21  | 68                        | (D)   | 50                  | 4                            | 0                      | 0                            | 11                           | 55                           | 4                              | (D)                          | 3                     | (D)                          |
| Utilities  | 22  | 85                        | 133   | 53                  | 2                            | 11                     | (D)                          | 19                           | (D)                          | 2                              | (D)                          | 0                     | 0                            |
| Construction   | 23  | 399                       | 320   | 276                 | 9                            | 57                     | 27                           | 60                           | 93                           | 6                              | 191                          | 0                     | 0                            |
| Trade  | 42, 44, 45                                | 4,735                     | 24,372  | 3,617               | 167                          | 801                    | (D)                          | 229                          | 841                          | 60                             | (D)                          | 28                    | 21,022                       |
| Transportation and warehousing                         | 48, 49                                    | 362                       | 1,848   | 100                 | 3                            | 1                      | (D)                          | 257                          | 1,468                        | 2                              | (D)                          | 2                     | (D)                          |
| Information  | 51  | 1,850                     | (D)   | 699                 | 27                           | 383                    | 251                          | 603                          | (D)                          | 141                            | 4,060                        | 24                    | (D)                          |
| Publishing   | 511                                       | 1,279                     | 13,760  | 449                 | 26                           | 282                    | 189                          | 417                          | (D)                          | 112                            | 3,173                        | 19                    | (D)                          |
| Newspaper, periodical, book, and database              | 5111                                      | 152                       | 649   | 50                  | 1                            | 50                     | 24                           | 46                           | 96                           | 4                              | 154                          | 3                     | 375                          |
| Software   | 5112                                      | 1,127                     | 13,111  | 399                 | 25                           | 232                    | 165                          | 371                          | (D)                          | 108                            | 3,020                        | 16                    | (D)                          |
| Broadcasting and telecommunications                    | 513                                       | 361                       | (D)   | 250                 | 2                            | 0                      | 0                            | 98                           | 228                          | 11                             | (D)                          | 2                     | (D)                          |
| Radio and television broadcasting                      | 5131                                      | 51                        | (D)   | 0                   | 0                            | 0                      | 0                            | 49                           | 131                          | 1                              | (D)                          | 0                     | 0                            |
| Telecommunications                                     | 5133                                      | 310                       | (D)   | 250                 | 2                            | 0                      | 0                            | 49                           | 98                           | 9                              | 308                          | 2                     | (D)                          |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)                    | 1                         | (D)   | 0                   | 0                            | 0                      | 0                            | 0                            | 0                            | 1                              | (D)                          | 0                     | 0                            |
| Other information                                      | 51 minus (511, 513)                       | 209                       | (D)   | 0                   | 0                            | 101                    | 63                           | 87                           | 280                          | 18                             | (D)                          | 3                     | 1,420                        |
| Finance, insurance, and real estate                    | 52, 53                                    | 338                       | (D)   | 250                 | 10                           | 6                      | 4                            | 40                           | 160                          | 35                             | (D)                          | 6                     | 1,062                        |
| Professional, scientific, and technical services       | 54  | 5,840                     | 27,704  | 1,951               | 133                          | 1,465                  | 717                          | 1,878                        | 5,602                        | 519                            | 12,528                       | 27                    | 8,724                        |
| Architectural, engineering, and related services       | 5413                                      | 938                       | 3,386   | 334                 | 22                           | 231                    | 84                           | 298                          | 656                          | 69                             | (D)                          | 5                     | (D)                          |
| Computer systems design and related services           | 5415                                      | 2,516                     | 9,154   | 1,100               | 82                           | 458                    | 232                          | 763                          | 2,584                        | 186                            | (D)                          | 8                     | (D)                          |
| Scientific R&D services                                | 5417                                      | 1,576                     | 14,244  | 261                 | 19                           | 594                    | 296                          | 450                          | 1,863                        | 256                            | 7,127                        | 14                    | 4,939                        |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417)               | 811                       | 920   | 255                 | 10                           | 181                    | 105                          | 367                          | 499                          | 8                              | 307                          | 0                     | 0                            |

See explanatory information and SOURCE at end of table.

TABLE A-5. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. and number of companies that performed R&D in the U.S., by industry and size of company, by size of total R&D program: 2001

Page 3 of 3

Page 3 of 3

| Industry and size of company            | NAICS codes             | Total number of companies | Total amount <sup>1</sup><br>[Millions of dollars] | Size of R&D program |                              |                        |                              |                              |                              |                                |                              |                       |                              |
|---|-------------------------|---------------------------|--|---------------------|------------------------------|------------------------|------------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|-----------------------|------------------------------|
|   |                         |                           |  | Less than \$200,000 |                              | \$200,000 to \$999,999 |                              | \$1 million to \$9.9 million |                              | \$10 million to \$99.9 million |                              | \$100 million or more |                              |
|   |                         |                           |  | Number of companies | Amount [Millions of dollars] | Number of companies    | Amount [Millions of dollars] | Number of companies          | Amount [Millions of dollars] | Number of companies            | Amount [Millions of dollars] | Number of companies   | Amount [Millions of dollars] |
| Distribution by industry:               |                         |                           |  |                     |                              |                        |                              |                              |                              |                                |                              |                       |                              |
| Management of companies and enterprises | 55                      | 375                       | 381  | 256                 | 8                            | 3                      | 1                            | 113                          | 271                          | 3                              | 101                          | 0                     | 0                            |
| Health care services                    | 621-23                  | 1,294                     | 1,149  | 755                 | 21                           | 409                    | 177                          | 125                          | 655                          | 4                              | (D)                          | 1                     | (D)                          |
| Other nonmanufacturing                  | 56, 61, 624, 71, 72, 81 | 1,099                     | 1,259  | 798                 | 51                           | 109                    | 25                           | 176                          | 693                          | 15                             | (D)                          | 1                     | (D)                          |
| Distribution by size of company:        |                         |                           |  |                     |                              |                        |                              |                              |                              |                                |                              |                       |                              |
| [Number of employees]                   |                         |                           |  |                     |                              |                        |                              |                              |                              |                                |                              |                       |                              |
| Total                                   |                         | 33,263                    | 198,505  | 17,318              | 1,053                        | 8,102                  | 3,598                        | 5,818                        | 18,525                       | 1,783                          | 43,298                       | 243                   | 132,031                      |
| 5 to 24                                 |                         | 14,681                    | 4,828  | 10,378              | 577                          | 3,039                  | 1,226                        | 1,264                        | 3,025                        | 0                              | 0                            | 0                     | 0                            |
| 25 to 49                                |                         | 5,036                     | 3,750  | 2,562               | 139                          | 1,578                  | 711                          | 878                          | 2,563                        | 17                             | 337                          | 0                     | 0                            |
| 50 to 99                                |                         | 5,030                     | 8,202  | 2,147               | 148                          | 1,466                  | 728                          | 1,141                        | 3,434                        | 274                            | 3,891                        | 0                     | 0                            |
| 100 to 249                              |                         | 4,261                     | 12,916   | 1,542               | 134                          | 1,152                  | 512                          | 1,101                        | 4,338                        | 465                            | 7,931                        | 0                     | 0                            |
| 250 to 499                              |                         | 1,504                     | 8,702  | 407                 | 31                           | 420                    | 199                          | 422                          | 1,366                        | 245                            | 5,966                        | 9                     | 1,141                        |
| 500 to 999                              |                         | 1,194                     | 10,564   | 185                 | (D)                          | 285                    | 131                          | 484                          | 1,584                        | 229                            | 7,032                        | 11                    | (D)                          |
| 1,000 to 4,999                          |                         | 1,039                     | 26,748   | 60                  | (D)                          | 130                    | 74                           | 431                          | (D)                          | 349                            | 10,519                       | 70                    | (D)                          |
| 5,000 to 9,999                          |                         | 244                       | 17,487   | 33                  | 1                            | 14                     | 7                            | 57                           | 277                          | 97                             | 3,332                        | 43                    | 13,870                       |
| 10,000 to 24,999                        |                         | 156                       | 27,065   | 1                   | (D)                          | 11                     | 6                            | 25                           | (D)                          | 70                             | (D)                          | 49                    | 24,439                       |
| 25,000 or more                          |                         | 118                       | 78,244   | 2                   | 0                            | 5                      | 3                            | 15                           | (D)                          | 36                             | (D)                          | 61                    | 76,380                       |

<sup>1</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.  
(-) = Indicates data not collected.

NOTE: Starting in 1999, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. Statistics for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001



**Table A-6. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. and number of companies in manufacturing and nonmanufacturing industries that performed industrial R&D in the U.S., by size of company: 2001**

| Size of company<br>[Number of employees] | Total <sup>1</sup>                                   | Manufacturing | Nonmanufacturing |
|--|--|---------------|------------------|
|  | Funds for industrial R&D<br>[In millions of dollars] |               |                  |
| Total                                    | 198,505  | 120,705       | 77,799           |
| 5 to 24                                  | 4,828  | 973           | 3,855            |
| 25 to 49                                 | 3,750  | 1,123         | 2,627            |
| 50 to 99                                 | 8,202  | 3,924         | 4,278            |
| 100 to 249                               | 12,916   | 4,817         | 8,099            |
| 250 to 499                               | 8,702  | 3,345         | 5,357            |
| 500 to 999                               | 10,564   | 5,290         | 5,273            |
| 1,000 to 4,999                           | 26,748   | 15,828        | 10,919           |
| 5,000 to 9,999                           | 17,487   | 10,918        | 6,569            |
| 10,000 to 24,999                         | 27,065   | 15,647        | 11,418           |
| 25,000 or more                           | 78,244   | 58,840        | 19,404           |
| Number of R&D-performing companies       |  |               |                  |
| Total                                    | 33,263   | 16,817        | 16,446           |
| 5 to 24                                  | 14,681   | 5,802         | 8,879            |
| 25 to 49                                 | 5,036  | 2,013         | 3,023            |
| 50 to 99                                 | 5,030  | 3,209         | 1,820            |
| 100 to 249                               | 4,261  | 2,817         | 1,444            |
| 250 to 499                               | 1,504  | 1,040         | 464              |
| 500 to 999                               | 1,194  | 851           | 343              |
| 1,000 to 4,999                           | 1,039  | 755           | 284              |
| 5,000 to 9,999                           | 244  | 164           | 80               |
| 10,000 to 24,999                         | 156  | 97            | 60               |
| 25,000 or more                           | 118  | 68            | 50               |

<sup>1</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-7. Company and other non-Federal funds for industrial R&D performance in the U.S.,  
by industry and size of company: 1999-2001

Page 1 of 3

Page 1 of 3

| Industry and size of company                                     | NAICS codes                               | 1999 <sup>1</sup>        | 2000    | 2001    |
|--|---|--------------------------|---------|---------|
|  |   | [In millions of dollars] |         |         |
| Distribution by industry:  |   |                          |         |         |
| All industries   | 21-23, 31-33, 42, 44-81                   | 160,176                  | 180,421 | 181,606 |
| Manufacturing  | 31-33                                     | 99,865                   | 110,750 | 109,221 |
| Food   | 311                                       | 1,132                    | 1,145   | 1,818   |
| Beverage and tobacco products                                    | 312                                       | (D)                      | 417     | 152     |
| Textiles, apparel, and leather                                   | 313-16                                    | 334                      | 266     | 255     |
| Wood products  | 321                                       | 70                       | 105     | 181     |
| Paper, printing and support activities                           | 322, 323                                  | 2,474                    | 2,700   | 2,664   |
| Petroleum and coal products                                      | 324                                       | (D)                      | 1,172   | 1,057   |
| Chemicals  | 325                                       | 20,051                   | 20,768  | 17,713  |
| Basic chemicals  | 3251                                      | 2,648                    | 2,050   | 1,835   |
| Resin, synthetic rubber, fibers, and filament                    | 3252                                      | 2,216                    | 2,842   | 2,745   |
| Pharmaceuticals and medicines                                    | 3254                                      | 12,236                   | 12,793  | 10,137  |
| Other chemicals  | 325 minus (3251-52, 3254)                 | 2,951                    | 3,084   | 2,996   |
| Plastics and rubber products                                     | 326                                       | 1,785                    | 1,675   | 2,245   |
| Nonmetallic mineral products                                     | 327                                       | 595                      | 845     | 978     |
| Primary metals   | 331                                       | 457                      | 598     | 479     |
| Fabricated metal products  | 332                                       | 1,608                    | 1,631   | 1,545   |
| Machinery  | 333                                       | 5,658                    | 6,539   | 6,337   |
| Computer and electronic products                                 | 334                                       | 29,939                   | 39,553  | 41,232  |
| Computers and peripheral equipment                               | 3341                                      | 4,126                    | 5,162   | 3,165   |
| Communications equipment   | 3342                                      | 5,797                    | 11,183  | 15,209  |
| Semiconductor and other electronic components                    | 3344                                      | 10,624                   | 12,787  | 14,210  |
| Navigational, measuring, electromedical, and control instruments | 3345                                      | 8,632                    | 10,114  | 7,565   |
| Other computer and electronic products                           | 334 minus (3341-42, 3344-45)              | 760                      | 307     | 1,083   |
| Electrical equipment, appliances, and components                 | 335                                       | 3,820                    | 3,390   | 4,680   |
| Transportation equipment   | 336                                       | 23,928                   | 22,917  | 21,004  |
| Motor vehicles, trailers, and parts                              | 3361-63                                   | 17,987                   | 18,306  | 16,089  |
| Aerospace products and parts                                     | 3364                                      | 5,309                    | 3,895   | 4,083   |
| Other transportation equipment                                   | 336 minus (3361-64)                       | 632                      | 716     | 832 (S) |
| Furniture and related products                                   | 337                                       | 248                      | 284     | 301     |
| Miscellaneous manufacturing                                      | 339                                       | 3,825                    | 4,195   | 6,581   |
| Medical equipment and supplies                                   | 3391                                      | 3,251                    | 3,741   | 5,903   |
| Other miscellaneous manufacturing                                | 339 minus (3391)                          | 574                      | 453     | 678     |
| Other manufacturing  | 31-33 minus (311-16, 321-27, 331-37, 339) | --                       | --      | --      |

See explanatory information and SOURCE at end of table.

Table A-7. Company and other non-Federal funds for industrial R&D performance in the U.S.,  
by industry and size of company: 1999-2001

Page 2 of 3

| Industry and size of company                           | NAICS codes                 | 1999 <sup>1</sup>        | 2000   | 2001   |
|--|-----------------------------|--------------------------|--------|--------|
|  |                             | [In millions of dollars] |        |        |
| Distribution by industry:                              |                             |                          |        |        |
| Nonmanufacturing                                       | 21-23, 42, 44-81            | 60,311                   | 69,671 | 72,384 |
| Mining, extraction, and support activities             | 21                          | 2,352                    | 822    | 846    |
| Utilities  | 22                          | 126                      | 136    | 114    |
| Construction   | 23                          | 690                      | 222    | 320    |
| Trade  | 42, 44, 45                  | 19,521                   | 24,929 | 24,284 |
| Transportation and warehousing.                        | 48, 49                      | 460                      | 277    | 1,776  |
| Information  | 51                          | 14,892                   | 16,290 | 17,259 |
| Publishing   | 511                         | 11,253                   | 12,926 | 13,716 |
| Newspaper, periodical, book, and database              | 5111                        | 371                      | 365    | 649    |
| Software   | 5112                        | 10,882                   | 12,561 | 13,067 |
| Broadcasting and telecommunications                    | 513                         | 1,393                    | 1,025  | 1,270  |
| Radio and television broadcasting                      | 5131                        | (D)                      | (D)    | (D)    |
| Telecommunications                                     | 5133                        | (D)                      | (D)    | 1,101  |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)      | 18                       | 59     | (D)    |
| Other information                                      | 51 minus (511, 513)         | 2,246                    | 2,339  | 2,273  |
| Finance, insurance, and real estate                    | 52, 53                      | 1,570                    | 4,024  | 2,424  |
| Professional, scientific, and technical services       | 54                          | 14,379                   | 17,949 | 22,640 |
| Architectural, engineering, and related services       | 5413                        | 2,402                    | 2,232  | 2,365  |
| Computer systems design and related services           | 5415                        | 3,989                    | 4,943  | 8,656  |
| Scientific R&D services                                | 5417                        | 7,413                    | 9,715  | 10,893 |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417) | 575                      | 1,059  | 726    |
| Management of companies and enterprises                | 55                          | 72                       | 49     | 381    |
| Health care services                                   | 621-23                      | 631                      | 477    | 1,120  |
| Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81     | 640                      | 713    | 1,221  |

See explanatory information and SOURCE at end of table.

Table A-7. Company and other non-Federal funds for industrial R&D performance in the U.S.,  
by industry and size of company: 1999-2001

Page 3 of 3

Page 3 of 3

| Industry and size of company                              |  | 1999 <sup>1</sup>        | 2000    | 2001    |
|---|--|--------------------------|---------|---------|
|   |  | [In millions of dollars] |         |         |
|   |  |                          |         |         |
| Distribution by size of company:<br>[Number of employees] |  |                          |         |         |
| Total   |  | 160,176                  | 180,421 | 181,606 |
| 5 to 24   |  | 6,393                    | 5,940   | 4,175   |
| 25 to 49  |  | 4,382                    | 4,786   | 3,548   |
| 50 to 99  |  | 6,623                    | 6,745   | 7,654   |
| 100 to 249  |  | 6,540                    | 8,351   | 12,012  |
| 250 to 499  |  | 7,407                    | 6,819   | 8,143   |
| 500 to 999  |  | 6,441                    | 8,580   | 9,936   |
| 1,000 to 4,999  |  | 23,944                   | 29,860  | 26,140  |
| 5,000 to 9,999  |  | 14,182                   | 15,143  | 15,836  |
| 10,000 to 24,999  |  | 24,525                   | 27,976  | 26,161  |
| 25,000 or more  |  | 59,740                   | 66,221  | 68,001  |

<sup>1</sup> Some statistics for 1999 have been revised since originally published.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.  
(S) = Indicates imputation of more than 50 percent.  
(--) = Indicates data not collected.

NOTES: The R&D in this table is the industrial R&D performed within company facilities funded from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and State governments. Excluded from this table are company-funded R&D not performed within the company (e.g., R&D contracted out to other organizations) and company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations).

For 1999, 2000, and 2001, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. For 1999 and 2000, statistics previously published for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-8. Company and other non-Federal funds for industrial R&amp;D performance in the U.S., by industry, by size of company: 2001

| Industry   | NAICS codes                  | Total   | Size of company [number of employees] |       |       |        |        |        |          |          |           |         |
|--|------------------------------|---------|---------------------------------------|-------|-------|--------|--------|--------|----------|----------|-----------|---------|
|  |                              |         | 5 to                                  | 25 to | 50 to | 100 to | 250 to | 500 to | 1,000 to | 5,000 to | 10,000 to | 25,000  |
|  |                              |         | 24                                    | 49    | 99    | 249    | 499    | 999    | 4,999    | 9,999    | 24,999    | or more |
| [In millions of dollars]   |                              |         |                                       |       |       |        |        |        |          |          |           |         |
| Distribution by industry:  |                              |         |                                       |       |       |        |        |        |          |          |           |         |
| All industries   | 21-23, 31-33, 42, 44-81      | 181,606 | 4,175                                 | 3,548 | 7,654 | 12,012 | 8,143  | 9,936  | 26,140   | 15,836   | 26,161    | 68,001  |
| Manufacturing  | 31-33                        | 109,221 | 864                                   | 1,110 | 3,820 | 4,730  | 3,328  | 5,126  | 15,722   | 10,240   | 14,762    | 49,520  |
| Food   | 311                          | 1,818   | 4                                     | 28    | 40    | 18     | 57     | 128    | 281      | 54       | 345       | 863     |
| Beverage and tobacco products                                    | 312                          | 152     | 0                                     | 0     | 0     | 0      | 0      | 0      | 37       | (D)      | (D)       | 0       |
| Textiles, apparel, and leather                                   | 313-16                       | 255     | 26                                    | (D)   | 6     | 2      | 26     | 19     | 123      | (D)      | 51        | 0       |
| Wood products  | 321                          | 181     | 56                                    | 0     | 4     | 1      | (D)    | (D)    | 24       | 28       | (D)       | 0       |
| Paper, printing and support activities                           | 322, 323                     | 2,664   | 2                                     | (D)   | 35    | 12     | (D)    | (D)    | 80       | 93       | 377       | 1,990   |
| Petroleum and coal products                                      | 324                          | 1,057   | 0                                     | 0     | 0     | 0      | 6      | 5      | 7        | 85       | 2         | 952     |
| Chemicals  | 325                          | 17,713  | 205                                   | 427   | 497   | 134    | 146    | 588    | 2,623    | 2,649    | 4,618     | 5,825   |
| Basic chemicals  | 3251                         | 1,835   | 24                                    | 28    | 142   | 77     | 36     | 221    | 692      | 335      | 280       | 0       |
| Resin, synthetic rubber, fibers, and filament                    | 3252                         | 2,745   | 0                                     | 0     | 161   | (D)    | (D)    | 105    | 198      | 344      | (D)       | (D)     |
| Pharmaceuticals and medicines                                    | 3254                         | 10,137  | 2                                     | 392   | 115   | (D)    | (D)    | 177    | 983      | 1,055    | 3,588     | 3,780   |
| Other chemicals  | 325 minus (3251-52, 3254)    | 2,996   | 179                                   | 7     | 79    | 30     | 83     | 85     | 749      | 915      | (D)       | (D)     |
| Plastics and rubber products                                     | 326                          | 2,245   | 1                                     | 0     | 25    | 73     | 967    | 228    | 345      | (D)      | 126       | (D)     |
| Nonmetallic mineral products                                     | 327                          | 978     | 12                                    | 28    | 0     | 28     | 515    | 15     | 130      | 59 (S)   | 190       | 0       |
| Primary metals   | 331                          | 479     | 28                                    | 8     | 3     | 11     | 9      | 38     | 105      | (D)      | 44        | (D)     |
| Fabricated metal products  | 332                          | 1,545   | 66                                    | 0     | 51    | 92     | 53     | 108    | 206      | (D)      | 236       | (D)     |
| Machinery  | 333                          | 6,337   | 76                                    | 68    | 221   | 194    | 250    | 549    | 1,489    | 637      | 1,658     | 1,195   |
| Computer and electronic products                                 | 334                          | 41,232  | 223                                   | 347   | 2,807 | 2,330  | 814    | 2,698  | 7,652    | 4,764    | 4,318     | 15,279  |
| Computers and peripheral equipment                               | 3341                         | 3,165   | 30                                    | (D)   | 47    | 275    | 163    | 346    | 235      | (D)      | 472       | 0       |
| Communications equipment   | 3342                         | 15,209  | 82                                    | 0     | 1,419 | 694    | 281    | 1,462  | 1,131    | 1,205    | (D)       | (D)     |
| Semiconductor and other electronic components                    | 3344                         | 14,210  | 0                                     | (D)   | 784   | 212    | 184    | 354    | 4,722    | (D)      | 2,323     | 4,357   |
| Navigational, measuring, electromedical, and control instruments | 3345                         | 7,565   | 111                                   | 83    | 534   | 365    | 143    | 494    | 1,433    | 891      | 1,209     | 2,301   |
| Other computer and electronic products                           | 334 minus (3341-42, 3344-45) | 1,083   | 0                                     | 0     | 23    | 784    | 43     | 42     | (D)      | (D)      | (D)       | (D)     |
| Electrical equipment, appliances, and components                 | 335                          | 4,680   | 4                                     | 96    | 35    | 1,513  | (D)    | 203    | 432      | 176      | 728       | (D)     |
| Transportation equipment   | 336                          | 21,004  | 42                                    | 0     | 41    | 4      | 180    | 375    | 625      | 565      | 1,040     | 18,133  |
| Motor vehicles, trailers, and parts                              | 3361-63                      | 16,089  | 41                                    | 0     | 26    | 0      | 102    | 293    | 481      | (D)      | 383       | (D)     |
| Aerospace products and parts                                     | 3364                         | 4,083   | 0                                     | 0     | 15    | 4      | 0      | (D)    | 58       | 132      | (D)       | 3,560   |
| Other transportation equipment                                   | 336 minus (3361-64)          | 832 (S) | 1                                     | 0     | 0     | 0      | 77     | (D)    | 86       | (D)      | (D)       | (D)     |

See explanatory information and SOURCE at end of table.

Table A-8. Company and other non-Federal funds for industrial R&amp;D performance in the U.S., by industry, by size of company: 2001

| Industry   | NAICS codes                               | Total  | Size of company [number of employees] |       |       |        |        |        |          |          |           |         |
|--|---|--------|---------------------------------------|-------|-------|--------|--------|--------|----------|----------|-----------|---------|
|  |   |        | 5 to                                  | 25 to | 50 to | 100 to | 250 to | 500 to | 1,000 to | 5,000 to | 10,000 to | 25,000  |
|  |   |        | 24                                    | 49    | 99    | 249    | 499    | 999    | 4,999    | 9,999    | 24,999    | or more |
| [In millions of dollars]                               |   |        |                                       |       |       |        |        |        |          |          |           |         |
| Distribution by industry:                              |   |        |                                       |       |       |        |        |        |          |          |           |         |
| Furniture and related products                         | 337                                       | 301    | 0                                     | 0     | 1     | 14     | 22     | (D)    | 46       | 83 (S)   | 83        | (D)     |
| Miscellaneous manufacturing                            | 339                                       | 6,581  | 120                                   | 91    | 54    | 302    | 194    | 140    | 1,516    | (D)      | 861       | (D)     |
| Medical equipment and supplies                         | 3391                                      | 5,903  | 103                                   | 85    | 21    | 239    | 162    | 104    | 1,226    | 635      | (D)       | (D)     |
| Other miscellaneous manufacturing                      | 339 minus (3391)                          | 678    | 17                                    | 6     | 33    | 64     | 32     | 36     | 290      | (D)      | (D)       | (D)     |
| Other manufacturing                                    | 31-33 minus (311-16, 321-27, 331-37, 339) | --     | --                                    | --    | --    | --     | --     | --     | --       | --       | --        | --      |
| Nonmanufacturing                                       | 21-23, 42, 44-81                          | 72,384 | 3,311                                 | 2,439 | 3,833 | 7,282  | 4,815  | 4,810  | 10,418   | 5,596    | 11,399    | 18,481  |
| Mining, extraction, and support activities             | 21  | 846    | 0                                     | 4     | 0     | 0      | (D)    | 13     | 54       | 95       | (D)       | (D)     |
| Utilities  | 22  | 114    | 0                                     | 0     | 0     | 0      | 0      | (D)    | 28       | 38       | 32        | (D)     |
| Construction   | 23  | 320    | 81                                    | 2     | 0     | 4      | 91 (S) | (D)    | 19       | (D)      | 108       | 0       |
| Trade  | 42, 44, 45                                | 24,284 | 209                                   | 52    | 196   | 717    | 236    | 512    | 2,713    | 3,632    | 6,307     | 9,711   |
| Transportation and warehousing                         | 48, 49                                    | 1,776  | 1,377                                 | 2     | 0     | 0      | 0      | (D)    | 25       | 0        | (D)       | 363     |
| Information  | 51  | 17,259 | 207                                   | 325   | 515   | 802    | (D)    | 1,252  | 3,926    | (D)      | 2,304     | 6,616   |
| Publishing   | 511                                       | 13,716 | 206                                   | 263   | 427   | 664    | 888    | 989    | 3,617    | (D)      | (D)       | (D)     |
| Newspaper, periodical, book, and database              | 5111                                      | 649    | 24                                    | 58    | 1     | 0      | (D)    | 0      | 377      | 0        | 36        | (D)     |
| Software   | 5112                                      | 13,067 | 182                                   | 206   | 427   | 664    | (D)    | 989    | 3,240    | (D)      | (D)       | (D)     |
| Broadcasting and telecommunications                    | 513                                       | 1,270  | 2                                     | 0     | 0     | 0      | (D)    | 115    | 168      | 0        | (D)       | 892     |
| Radio and television broadcasting                      | 5131                                      | (D)    | 0                                     | 0     | 0     | 0      | 0      | 0      | (D)      | 0        | 24        | 0       |
| Telecommunications                                     | 5133                                      | 1,101  | 2                                     | 0     | 0     | 0      | (D)    | 115    | (D)      | 0        | (D)       | 892     |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)                    | (D)    | 0                                     | 0     | 0     | 0      | (D)    | 0      | 0        | 0        | 0         | 0       |
| Other information                                      | 51 minus (511, 513)                       | 2,273  | 0                                     | 62    | 88    | 138    | 171    | 148    | 141      | (D)      | 392       | (D)     |
| Finance, insurance, and real estate                    | 52, 53                                    | 2,424  | 12                                    | 0     | 0     | 55     | 622    | 18     | 391      | 100      | 573       | 654     |
| Professional, scientific, and technical services       | 54  | 22,640 | 976                                   | 1,968 | 2,539 | 5,199  | 2,703  | 2,883  | 2,974    | (D)      | (D)       | 632 (S) |
| Architectural, engineering, and related services       | 5413                                      | 2,365  | 189                                   | 199   | 431   | 284    | 117    | (D)    | 902      | 40       | (D)       | (D)     |
| Computer systems design and related services           | 5415                                      | 8,656  | 308                                   | 623   | 1,022 | 1,788  | 783    | 825    | 1,251    | 449      | (D)       | (D)     |
| Scientific R&D services                                | 5417                                      | 10,893 | 381                                   | 973   | 1,084 | 2,986  | 1,772  | 1,787  | 789      | (D)      | 0         | (D)     |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417)               | 726    | 99                                    | 173   | 2     | 142    | 30 (S) | (D)    | 32       | 59       | (D)       | (D)     |

See explanatory information and SOURCE at end of table.

Table A-8. Company and other non-Federal funds for industrial R&D performance in the U.S., by industry, by size of company: 2001

| Industry                                | NAICS codes             | Total                    | Size of company [number of employees] |             |             |               |               |               |                   |                   |                     |                   |
|---|-------------------------|--------------------------|---------------------------------------|-------------|-------------|---------------|---------------|---------------|-------------------|-------------------|---------------------|-------------------|
|   |                         |                          | 5 to<br>24                            | 25 to<br>49 | 50 to<br>99 | 100 to<br>249 | 250 to<br>499 | 500 to<br>999 | 1,000 to<br>4,999 | 5,000 to<br>9,999 | 10,000 to<br>24,999 | 25,000<br>or more |
|   |                         | [In millions of dollars] |                                       |             |             |               |               |               |                   |                   |                     |                   |
| Distribution by industry:               |                         |                          |                                       |             |             |               |               |               |                   |                   |                     |                   |
| Management of companies and enterprises | 55                      | 381                      | 60                                    | (D)         | 138         | (D)           | 0             | 74            | (D)               | 0                 | 0                   | 0                 |
| Health care services                    | 621-23                  | 1,120                    | 315                                   | (D)         | 444         | 3             | 17            | 36            | (D)               | (D)               | (D)                 | (D)               |
| Other nonmanufacturing                  | 56, 61, 624, 71, 72, 81 | 1,221                    | 75                                    | 71          | 1           | (D)           | 44            | 7             | 174               | (D)               | 39 (S)              | 280               |

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.  
(S) = Indicates imputation of more than 50 percent.  
(-) = Indicates data not collected.

NOTES: The R&D in this table is the industrial R&D performed within company facilities funded from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and State governments. Excluded from this table are company-funded R&D not performed within the company (e.g., R&D contracted out to other organizations) and company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations).

Starting in 1999, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. Statistics for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001



Table A-9. Company and other non-Federal funds for industrial R&D performance in the U.S. and number of companies that performed company and other nonfederally funded R&D in the U.S., by industry and size of company, by size of nonfederally funded R&D program: 2001

| Industry and size of company  | NAICS codes                     | Total<br>number<br>of<br>companies | Total<br>amount<br>[In millions<br>of dollars] | Size of nonfederally funded R&D program |                                       |                           |                                       |                                 |                                       |                                   |                                       |                           |                                       |
|---|---------------------------------|------------------------------------|--|---|---------------------------------------|---------------------------|---------------------------------------|---------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|---------------------------|---------------------------------------|
|   |                                 |                                    |  | Less than<br>\$200,000                  |                                       | \$200,000<br>to \$999,999 |                                       | \$1 million<br>to \$9.9 million |                                       | \$10 million<br>to \$99.9 million |                                       | \$100 million<br>or more  |                                       |
|   |                                 |                                    |  | Number<br>of<br>companies               | Amount<br>[In millions<br>of dollars] | Number<br>of<br>companies | Amount<br>[In millions<br>of dollars] | Number<br>of<br>companies       | Amount<br>[In millions<br>of dollars] | Number<br>of<br>companies         | Amount<br>[In millions<br>of dollars] | Number<br>of<br>companies | Amount<br>[In millions<br>of dollars] |
| Distribution by industry:   |                                 |                                    |  |   |                                       |                           |                                       |                                 |                                       |                                   |                                       |                           |                                       |
| All industries  | 21-23, 31-33, 42, 44-81         | 32,450                             | 181,606  | 17,755                                  | 1,119                                 | 7,432                     | 3,332                                 | 5,340                           | 17,413                                | 1,687                             | 41,126                                | 237                       | 118,617                               |
| Manufacturing   | 31-33                           | 16,462                             | 109,221  | 8,619                                   | 643                                   | 4,451                     | 1,963                                 | 2,261                           | 6,685                                 | 984                               | 22,326                                | 147                       | 77,605                                |
| Food  | 311                             | 969                                | 1,818  | 514                                     | 10                                    | 334                       | 145                                   | 99                              | 309                                   | 19                                | 667                                   | 3                         | 687                                   |
| Beverage and tobacco products                                       | 312                             | 12                                 | 152  | 1                                       | 0                                     | 2                         | 2                                     | 3                               | 15                                    | 5                                 | 135                                   | 0                         | 0                                     |
| Textiles, apparel, and leather                                      | 313-16                          | 514                                | 255  | 411                                     | 31                                    | 64                        | 32                                    | 33                              | 113                                   | 6                                 | 80                                    | 0                         | 0                                     |
| Wood products   | 321                             | 177                                | 181  | 62                                      | 5                                     | 104                       | 58                                    | 7                               | 16                                    | 4                                 | 103                                   | 0                         | 0                                     |
| Paper, printing and support activities                              | 322, 323                        | 495                                | 2,664  | 221                                     | 17                                    | 200                       | 47                                    | 57                              | 97                                    | 15                                | 417                                   | 3                         | 2,086                                 |
| Petroleum and coal products   | 324                             | 27                                 | 1,057  | 0                                       | 0                                     | 14                        | 6                                     | 6                               | 13                                    | 3                                 | 85                                    | 3                         | 952                                   |
| Chemicals   | 325                             | 1,773                              | 17,713   | 693                                     | 49                                    | 460                       | 201                                   | 506                             | 1,300                                 | 89                                | 2,931                                 | 25                        | 13,232                                |
| Basic chemicals   | 3251                            | 419                                | 1,835  | 11                                      | 0                                     | 236                       | 69                                    | 139                             | 314                                   | 30                                | 1,070                                 | 3                         | 381                                   |
| Resin, synthetic rubber, fibers, and filament                       | 3252                            | 66                                 | 2,745  | 0                                       | 0                                     | 0                         | 0                                     | 48                              | 170                                   | 14                                | 361                                   | 4                         | 2,214                                 |
| Pharmaceuticals and medicines                                       | 3254                            | 347                                | 10,137   | 100                                     | 2                                     | 49                        | 21                                    | 163                             | 492                                   | 22                                | 700                                   | 13                        | 8,921                                 |
| Other chemicals   | 325 minus (3251-52,<br>3254)    | 941                                | 2,996  | 582                                     | 46                                    | 175                       | 111                                   | 156                             | 324                                   | 23                                | 800                                   | 5                         | 1,716                                 |
| Plastics and rubber products  | 326                             | 811                                | 2,245  | 537                                     | 39                                    | 157                       | 74                                    | 83                              | 268                                   | 25                                | 560                                   | 9                         | 1,304                                 |
| Nonmetallic mineral products  | 327                             | 464                                | 978  | 266                                     | (D)                                   | 136                       | 44                                    | 27                              | 63                                    | 35                                | 738                                   | 1                         | (D)                                   |
| Primary metals  | 331                             | 427                                | 479  | 253                                     | (D)                                   | 131                       | 33                                    | 33                              | 103                                   | 9                                 | 159                                   | 1                         | (D)                                   |
| Fabricated metal products   | 332                             | 1,392                              | 1,545  | 974                                     | (D)                                   | 295                       | 129                                   | 104                             | 290                                   | 18                                | 528                                   | 1                         | (D)                                   |
| Machinery   | 333                             | 2,489                              | 6,337  | 1,544                                   | 126                                   | 614                       | 232                                   | 247                             | 727                                   | 73                                | 1,864                                 | 11                        | 3,387                                 |
| Computer and electronic products                                    | 334                             | 3,080                              | 41,232   | 905                                     | 83                                    | 1,059                     | 509                                   | 596                             | 1,624                                 | 465                               | 9,572                                 | 55                        | 29,443                                |
| Computers and peripheral equipment                                  | 3341                            | 237                                | 3,165  | 13                                      | 1                                     | 152                       | 71                                    | 25                              | 116                                   | 42                                | 973                                   | 5                         | 2,004                                 |
| Communications equipment  | 3342                            | 579                                | 15,209   | 141                                     | 19                                    | 107                       | 62                                    | 115                             | 365                                   | 204                               | 3,807                                 | 13                        | 10,956                                |
| Semiconductor and other electronic components                       | 3344                            | 735                                | 14,210   | 247                                     | 15                                    | 147                       | 58                                    | 222                             | 456                                   | 96                                | 2,392                                 | 23                        | 11,289                                |
| Navigational, measuring, electromedical,<br>and control instruments | 3345                            | 1,390                              | 7,565  | 496                                     | (D)                                   | 597                       | 284                                   | 218                             | 626                                   | 65                                | 1,518                                 | 14                        | (D)                                   |
| Other computer and electronic products                              | 334 minus (3341-42,<br>3344-45) | 139                                | 1,083  | 8                                       | (D)                                   | 57                        | 34                                    | 16                              | 61                                    | 57                                | 883                                   | 1                         | (D)                                   |
| Electrical equipment, appliances, and components                    | 335                             | 1,012                              | 4,680  | 434                                     | 24                                    | 338                       | 159                                   | 99                              | 538                                   | 136                               | 1,917                                 | 5                         | 2,042 (S)                             |
| Transportation equipment  | 336                             | 1,015                              | 21,004   | 697                                     | 61                                    | 101                       | 43                                    | 159                             | 558                                   | 39                                | 1,441                                 | 19                        | 18,901                                |
| Motor vehicles, trailers, and parts                                 | 3361-63                         | 648                                | 16,089   | 400                                     | (D)                                   | 100                       | (D)                                   | 114                             | 425                                   | 25                                | 909                                   | 10                        | 14,664                                |
| Aerospace products and parts  | 3364                            | 115                                | 4,083  | 98                                      | (D)                                   | 0                         | (D)                                   | 3                               | 21 (S)                                | 8                                 | 311                                   | 6                         | 3,739                                 |
| Other transportation equipment                                      | 336 minus (3361-64)             | 252                                | 832 (S)  | 200                                     | (D)                                   | 1                         | (D)                                   | 42                              | 112                                   | 6                                 | 221 (S)                               | 3                         | 499 (S)                               |

See explanatory information and SOURCE at end of table.

Table A-9. Company and other non-Federal funds for industrial R&D performance in the U.S. and number of companies that performed company and other nonfederally funded R&D in the U.S., by industry and size of company, by size of nonfederally funded R&D program: 2001

| Industry and size of company                           | NAICS codes                               | Total number of companies | Total amount [In millions of dollars] | Size of nonfederally funded R&D program |                                 |                        |                                 |                              |                                 |                                |                                 |                       |                                 |
|--|---|---------------------------|---------------------------------------|---|---------------------------------|------------------------|---------------------------------|------------------------------|---------------------------------|--------------------------------|---------------------------------|-----------------------|---------------------------------|
|  |   |                           |                                       | Less than \$200,000                     |                                 | \$200,000 to \$999,999 |                                 | \$1 million to \$9.9 million |                                 | \$10 million to \$99.9 million |                                 | \$100 million or more |                                 |
|  |   |                           |                                       | Number of companies                     | Amount [In millions of dollars] | Number of companies    | Amount [In millions of dollars] | Number of companies          | Amount [In millions of dollars] | Number of companies            | Amount [In millions of dollars] | Number of companies   | Amount [In millions of dollars] |
| Distribution by industry:                              |   |                           |                                       |   |                                 |                        |                                 |                              |                                 |                                |                                 |                       |                                 |
| Furniture and related products                         | 337                                       | 324                       | 301                                   | 220                                     | 14                              | 65                     | 33                              | 33                           | 75                              | 7                              | 180                             | 0                     | 0                               |
| Miscellaneous manufacturing                            | 339                                       | 1,480                     | 6,581                                 | 887                                     | 53                              | 378                    | 216                             | 168                          | 577                             | 37                             | 949                             | 10                    | 4,786                           |
| Medical equipment and supplies                         | 3391                                      | 637                       | 5,903                                 | 291                                     | (D)                             | 202                    | 134                             | 109                          | 436                             | 26                             | 640                             | 9                     | (D)                             |
| Other miscellaneous manufacturing                      | 339 minus (3391)                          | 843                       | 678                                   | 596                                     | (D)                             | 176                    | 81                              | 59                           | 140                             | 11                             | 309                             | 1                     | (D)                             |
| Other manufacturing                                    | 31-33 minus (311-16, 321-27, 331-37, 339) | --                        | --                                    | --                                      | --                              | --                     | --                              | --                           | --                              | --                             | --                              | --                    | --                              |
| Nonmanufacturing                                       | 21-23, 42, 44-81                          | 15,988                    | 72,384                                | 9,136                                   | 476                             | 2,980                  | 1,369                           | 3,080                        | 10,728                          | 702                            | 18,801                          | 90                    | 41,011                          |
| Mining, extraction, and support activities             | 21  | 68                        | 846                                   | 50                                      | 4                               | 0                      | 0                               | 11                           | 55                              | 4                              | 114                             | 3                     | 673                             |
| Utilities  | 22  | 85                        | 114                                   | 53                                      | 1                               | 11                     | (D)                             | 20                           | 94                              | 1                              | (D)                             | 0                     | 0                               |
| Construction   | 23  | 399                       | 320                                   | 276                                     | 9                               | 57                     | 27                              | 60                           | 93                              | 6                              | 191                             | 0                     | 0                               |
| Trade  | 42, 44, 45                                | 4,485                     | 24,284                                | 3,617                                   | 167                             | 551                    | 201                             | 229                          | 841                             | 60                             | 2,072                           | 28                    | 21,003                          |
| Transportation and warehousing                         | 48, 49                                    | 361                       | 1,776                                 | 100                                     | 3                               | 1                      | (D)                             | 257                          | 1,406                           | 1                              | (D)                             | 2                     | (D)                             |
| Information  | 51  | 1,849                     | 17,259                                | 699                                     | 27                              | 383                    | 243                             | 605                          | 1,824                           | 138                            | 4,005                           | 24                    | 11,161                          |
| Publishing   | 511                                       | 1,278                     | 13,716                                | 449                                     | 26                              | 282                    | 180                             | 418                          | 1,305                           | 110                            | 3,133                           | 19                    | 9,072                           |
| Newspaper, periodical, book, and database              | 5111                                      | 152                       | 649                                   | 50                                      | 1                               | 50                     | 24                              | 46                           | 96                              | 4                              | 154 (S)                         | 3                     | 375                             |
| Software   | 5112                                      | 1,126                     | 13,067                                | 399                                     | 25                              | 232                    | 156                             | 372                          | 1,210                           | 106                            | 2,980                           | 16                    | 8,697                           |
| Broadcasting and telecommunications                    | 513                                       | 361                       | 1,270                                 | 250                                     | 1                               | 0                      | 0                               | 98                           | 228                             | 11                             | (D)                             | 2                     | (D)                             |
| Radio and television broadcasting                      | 5131                                      | 51                        | (D)                                   | 0                                       | 0                               | 0                      | 0                               | 49                           | 131                             | 1                              | (D)                             | 0                     | 0                               |
| Telecommunications                                     | 5133                                      | 310                       | 1,101                                 | 250                                     | 1                               | 0                      | 0                               | 49                           | 98                              | 9                              | (D)                             | 2                     | (D)                             |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)                    | 1                         | (D)                                   | 0                                       | 0                               | 0                      | 0                               | 0                            | 0                               | 1                              | (D)                             | 0                     | 0                               |
| Other information                                      | 51 minus (511, 513)                       | 209                       | 2,273                                 | 0                                       | 0                               | 101                    | 63                              | 88                           | 290                             | 17                             | (D)                             | 3                     | (D)                             |
| Finance, insurance, and real estate                    | 52, 53                                    | 337                       | 2,424                                 | 250                                     | 10                              | 6                      | 4                               | 40                           | 160                             | 34                             | 1,189                           | 6                     | 1,062                           |
| Professional, scientific, and technical services       | 54  | 5,686                     | 22,640                                | 2,278                                   | 173                             | 1,503                  | 700                             | 1,442                        | 4,663                           | 438                            | 10,674                          | 25                    | 6,430                           |
| Architectural, engineering, and related services       | 5413                                      | 918                       | 2,365                                 | 337                                     | 22                              | 290                    | 99                              | 234                          | 508                             | 53                             | 955                             | 4                     | 780                             |
| Computer systems design and related services           | 5415                                      | 2,476                     | 8,656                                 | 1,110                                   | 82                              | 459                    | 236                             | 740                          | 2,443                           | 159                            | 3,322                           | 8                     | 2,567 (S)                       |
| Scientific R&D services                                | 5417                                      | 1,532                     | 10,893                                | 577                                     | 59                              | 372                    | 202                             | 352                          | 1,460                           | 218                            | 6,090                           | 13                    | 3,082                           |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417)               | 761                       | 726                                   | 255                                     | 10                              | 381                    | 163                             | 117                          | 247                             | 8                              | 307                             | 0                     | 0                               |

See explanatory information and SOURCE at end of table.

Table A-9. Company and other non-Federal funds for industrial R&D performance in the U.S. and number of companies that performed company and other nonfederally funded R&D in the U.S., by industry and size of company, by size of nonfederally funded R&D program: 2001

Page 3 of 3

| Industry and size of company                              | NAICS codes             | Total number of companies | Total amount [In millions of dollars] | Size of nonfederally funded R&D program |                                 |                        |                                 |                              |                                 |                                |                                 |                       |                                 |
|---|-------------------------|---------------------------|---------------------------------------|---|---------------------------------|------------------------|---------------------------------|------------------------------|---------------------------------|--------------------------------|---------------------------------|-----------------------|---------------------------------|
|   |                         |                           |                                       | Less than \$200,000                     |                                 | \$200,000 to \$999,999 |                                 | \$1 million to \$9.9 million |                                 | \$10 million to \$99.9 million |                                 | \$100 million or more |                                 |
|   |                         |                           |                                       | Number of companies                     | Amount [In millions of dollars] | Number of companies    | Amount [In millions of dollars] | Number of companies          | Amount [In millions of dollars] | Number of companies            | Amount [In millions of dollars] | Number of companies   | Amount [In millions of dollars] |
| Distribution by industry:                                 |                         |                           |                                       |   |                                 |                        |                                 |                              |                                 |                                |                                 |                       |                                 |
| Management of companies and enterprises                   | 55                      | 375                       | 381                                   | 256                                     | 8                               | 3                      | 1                               | 113                          | 271                             | 3                              | 101                             | 0                     | 0                               |
| Health care services                                      | 621-23                  | 1,294                     | 1,120                                 | 808                                     | (D)                             | 356                    | 163                             | 126                          | 645                             | 3                              | 49                              | 1                     | (D)                             |
| Other nonmanufacturing                                    | 56, 61, 624, 71, 72, 81 | 1,048                     | 1,221                                 | 748                                     | (D)                             | 109                    | 25                              | 176                          | 675                             | 14                             | 372                             | 1                     | (D)                             |
| Distribution by size of company:<br>[Number of employees] |                         |                           |                                       |   |                                 |                        |                                 |                              |                                 |                                |                                 |                       |                                 |
| Total   |                         | 32,450                    | 181,606                               | 17,755                                  | 1,119                           | 7,432                  | 3,332                           | 5,340                        | 17,413                          | 1,687                          | 41,126                          | 237                   | 118,617                         |
| 5 to 24   |                         | 14,165                    | 4,175                                 | 10,742                                  | 616                             | 2,489                  | 1,006                           | 934                          | 2,553                           | 0                              | 0                               | 0                     | 0                               |
| 25 to 49  |                         | 4,918                     | 3,548                                 | 2,496                                   | 144                             | 1,586                  | 708                             | 819                          | 2,365                           | 17                             | 332                             | 0                     | 0                               |
| 50 to 99  |                         | 4,950                     | 7,654                                 | 2,257                                   | 166                             | 1,375                  | 694                             | 1,052                        | 3,069                           | 266                            | 3,724                           | 0                     | 0                               |
| 100 to 249  |                         | 4,179                     | 12,012                                | 1,519                                   | 133                             | 1,157                  | 512                             | 1,091                        | 4,221                           | 412                            | 7,146                           | 0                     | 0                               |
| 250 to 499  |                         | 1,493                     | 8,143                                 | 408                                     | 30                              | 424                    | 200                             | 426                          | 1,370                           | 226                            | 5,402                           | 9                     | 1,141                           |
| 500 to 999  |                         | 1,188                     | 9,936                                 | 237                                     | 24                              | 239                    | 119                             | 485                          | 1,595                           | 218                            | 6,533                           | 10                    | 1,665                           |
| 1,000 to 4,999  |                         | 1,038                     | 26,140                                | 60                                      | (D)                             | 131                    | (D)                             | 435                          | 1,761                           | 344                            | 10,307                          | 69                    | 13,991                          |
| 5,000 to 9,999  |                         | 244                       | 15,836                                | 33                                      | 1                               | 15                     | 8                               | 58                           | 282                             | 97                             | 3,287                           | 41                    | 12,257                          |
| 10,000 to 24,999  |                         | 155                       | 26,161                                | 1                                       | (D)                             | 11                     | (D)                             | 25                           | 114                             | 71                             | 2,639                           | 47                    | 23,402                          |
| 25,000 or more  |                         | 118                       | 68,001                                | 2                                       | 0                               | 5                      | 3                               | 16                           | 82                              | 35                             | 1,756                           | 61                    | 66,160                          |

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

(-) = Indicates data not collected.

NOTES: The R&D in this table is the industrial R&D performed within company facilities funded from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and State governments. Excluded from this table are company-funded R&D not performed within the company (e.g., R&D contracted out to other organizations) and company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations).

Starting in 1999, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. Statistics for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-10. Company and other non-Federal funds for industrial R&D performance in the U.S. performed by outside organizations and number of R&D-performing companies that funded outside performance of R&D, by industry and size of company: 1999-2001

Page 1 of 3

| Industry and size of company                                     | NAICS codes                  | 1999 <sup>1</sup>   |                                    | 2000                |                                    | 2001                |                                    |
|--|------------------------------|---------------------|------------------------------------|---------------------|------------------------------------|---------------------|------------------------------------|
|  |                              | Number of companies | Amount<br>[In millions of dollars] | Number of companies | Amount<br>[In millions of dollars] | Number of companies | Amount<br>[In millions of dollars] |
| Distribution by industry:  |                              |                     |                                    |                     |                                    |                     |                                    |
| All industries   | 21-23, 31-33, 42, 44-81      | 4,243               | 9,240                              | 3,832               | 14,785                             | 2,939               | 8,723                              |
| Manufacturing  | 31-33                        | 1,720               | 4,080                              | 1,716               | 4,794                              | 1,363               | 3,957                              |
| Food   | 311                          | 82                  | 13                                 | 39                  | 25                                 | 53                  | 59                                 |
| Beverage and tobacco products                                    | 312                          | 1                   | (D)                                | 1                   | (D)                                | 2                   | 7                                  |
| Textiles, apparel, and leather                                   | 313-16                       | 73                  | 5                                  | 16                  | 5                                  | 6                   | 2                                  |
| Wood products  | 321                          | 6                   | (D)                                | 7                   | (D)                                | 2                   | (D)                                |
| Paper, printing and support activities                           | 322, 323                     | 6                   | (D)                                | 15                  | (D)                                | 2                   | (D)                                |
| Petroleum and coal products                                      | 324                          | 2                   | (D)                                | 13                  | (D)                                | 3                   | 107                                |
| Chemicals  | 325                          | 167                 | 2,386                              | 52                  | 2,783                              | 325                 | 2,065                              |
| Basic Chemicals  | 3251                         | 16                  | (D)                                | 10                  | (D)                                | 124                 | (D)                                |
| Resin, synthetic rubber, fibers, and filament                    | 3252                         | 4                   | (D)                                | 2                   | (D)                                | 4                   | (D)                                |
| Pharmaceuticals and medicines                                    | 3254                         | 14                  | 2,274                              | 14                  | 2,658                              | 162                 | 1,899                              |
| Other chemicals  | 325 minus (3251-52, 3254)    | 132                 | 57                                 | 26                  | 54                                 | 35                  | 99                                 |
| Plastics and rubber products                                     | 326                          | 21                  | 33                                 | 33                  | 24                                 | 23                  | 22                                 |
| Nonmetallic mineral products                                     | 327                          | 52                  | 10                                 | 23                  | 3                                  | 10                  | 2                                  |
| Primary metals   | 331                          |                     | 2                                  | 10                  | 2                                  | 19                  | 4                                  |
| Fabricated metal products  | 332                          | 49                  | 10                                 | 105                 | 21                                 | 46                  | 10                                 |
| Machinery  | 333                          | 173                 | 151                                | 137                 | 355                                | 51                  | 115                                |
| Computer and electronic products                                 | 334                          | 104                 | 101                                | 181                 | 168                                | 530                 | 565                                |
| Computers and peripheral equipment                               | 3341                         | 9                   | 24                                 | 9                   | 44                                 | 119                 | 118                                |
| Communications equipment   | 3342                         | 4                   | (D)                                | 21                  | (D)                                | 87                  | 80                                 |
| Semiconductor and other electronic components                    | 3344                         | 76                  | 33                                 | 58                  | (D)                                | 108                 | 86                                 |
| Navigational, measuring, electromedical, and control instruments | 3345                         | 15                  | 12                                 | 87                  | 31                                 | 210                 | 278                                |
| Other computer and electronic products                           | 334 minus (3341-42, 3344-45) | 1                   | (D)                                | 5                   | 2                                  | 5                   | 2                                  |
| Electrical equipment, appliances, and components                 | 335                          | 42                  | (D)                                | 50                  | 84                                 | 81                  | 60 (S)                             |
| Transportation equipment   | 336                          | 64                  | 812                                | 31                  | 771                                | 62                  | 708                                |
| Motor vehicles, trailers, and parts                              | 3361-63                      | 54                  | (D)                                | 26                  | (D)                                | 10                  | 657                                |
| Aerospace products and parts                                     | 3364                         | 4                   | 80                                 | 3                   | (D)                                | 50                  | (D)                                |
| Other transportation equipment                                   | 336 minus (3361-64)          | 5                   | (D)                                | 2                   | (D)                                | 2                   | (D)                                |
| Furniture and related products                                   | 337                          | 13                  | 1                                  | 1                   | (D)                                | 4                   | 2                                  |
| Miscellaneous manufacturing                                      | 339                          | 56                  | 18                                 | 103                 | 34                                 | 145                 | 54                                 |

See explanatory information and SOURCE at end of table.

Table A-10. Company and other non-Federal funds for industrial R&D performance in the U.S. performed by outside organizations and number of R&D-performing companies that funded outside performance of R&D, by industry and size of company: 1999-2001

Page 2 of 3

| Industry and size of company                           | NAICS codes                               | 1999 <sup>1</sup>   |                                 | 2000                |                                 | 2001                |                                 |
|--|---|---------------------|---------------------------------|---------------------|---------------------------------|---------------------|---------------------------------|
|  |   | Number of companies | Amount [In millions of dollars] | Number of companies | Amount [In millions of dollars] | Number of companies | Amount [In millions of dollars] |
| Distribution by industry:                              |   |                     |                                 |                     |                                 |                     |                                 |
| Medical equipment and supplies                         | 3391                                      | 25                  | 8                               | 44                  | 27                              | 110                 | 50                              |
| Other miscellaneous manufacturing                      | 339 minus (3391)                          | 31                  | 10                              | 59                  | 7                               | 34                  | 4                               |
| Other manufacturing                                    | 31-33 minus (311-16, 321-27, 331-37, 339) | --                  | --                              | --                  | --                              | --                  | --                              |
| Nonmanufacturing                                       | 21-23, 42, 44-81                          | 2,523               | 5,160                           | 2,116               | 9,991                           | 1,576               | 4,766                           |
| Mining, extraction, and support activities             | 21  | 4                   | 6                               | 4                   | (D)                             | 4                   | 11                              |
| Utilities  | 22  | 39                  | 227                             | 34                  | 286                             | 26                  | 93                              |
| Construction   | 23  | 1                   | (D)                             | 2                   | (D)                             | 63                  | (D)                             |
| Trade  | 42, 44, 45                                | 479                 | 1,805                           | 613                 | 6,713                           | 429                 | 1,887                           |
| Transportation and warehousing                         | 48, 49                                    | 12                  | 8                               | 58                  | 54                              | 3                   | (D)                             |
| Information  | 51  | 165                 | 504                             | 225                 | 597                             | 237                 | 577                             |
| Publishing   | 511                                       | 141                 | (D)                             | 156                 | 161                             | 153                 | 187                             |
| Newspaper, periodical, book, and database              | 5111                                      | 2                   | (D)                             | 3                   | 4                               | 4                   | 10                              |
| Software   | 5112                                      | 139                 | 181                             | 153                 | 157                             | 149                 | 177                             |
| Broadcasting and telecommunications                    | 513                                       | 10                  | (D)                             | 4                   | (D)                             | 4                   | 171                             |
| Radio and television broadcasting                      | 5131                                      | 0                   | 0                               | 0                   | 0                               | 0                   | 0                               |
| Telecommunications                                     | 5133                                      | 3                   | (D)                             | 4                   | (D)                             | 4                   | 171                             |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)                    | 7                   | 0                               | 0                   | 0                               | 0                   | 0                               |
| Other information                                      | 51 minus (511, 513)                       | 15                  | 69                              | 66                  | (D)                             | 81                  | 218                             |
| Finance, insurance, and real estate                    | 52, 53                                    | 66                  | 328                             | 38                  | 765                             | 27                  | 241                             |
| Professional, scientific, and technical services       | 54  | 394                 | 957                             | 469                 | 1,200                           | 655                 | 1,676                           |
| Architectural, engineering, and related services       | 5413                                      | 137                 | (D)                             | 161                 | 150                             | 92                  | 86                              |
| Computer systems design and related services           | 5415                                      | 79                  | 51                              | 84                  | 119                             | 114                 | 233                             |
| Scientific R&D services                                | 5417                                      | 174                 | 832                             | 164                 | 907                             | 441                 | 1,310                           |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417)               | 4                   | (D)                             | 60                  | 24                              | 8                   | 46                              |
| Management of companies and enterprises                | 55  | 2                   | (D)                             | 4                   | 1                               | 18                  | 22                              |
| Health care services                                   | 621-23                                    | 3                   | (D)                             | 56                  | 12                              | 6                   | (D)                             |
| Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81                   | 108                 | 6                               | 4                   | 2                               | 107                 | 245                             |

See explanatory information and SOURCE at end of table.

Table A-10. Company and other non-Federal funds for industrial R&D performance in the U.S. performed by outside organizations and number of R&D-performing companies that funded outside performance of R&D, by industry and size of company: 1999-2001

Page 3 of 3

Page 6 of 6

| Industry and size of company                              |  | 1999 <sup>1</sup>   |                                    | 2000                |                                    | 2001                |                                    |
|---|--|---------------------|------------------------------------|---------------------|------------------------------------|---------------------|------------------------------------|
|   |  | Number of companies | Amount<br>[In millions of dollars] | Number of companies | Amount<br>[In millions of dollars] | Number of companies | Amount<br>[In millions of dollars] |
| Distribution by size of company:<br>[Number of employees] |  |                     |                                    |                     |                                    |                     |                                    |
| Total   |  | 4,243               | 9,240                              | 3,832               | 14,785                             | 2,939               | 8,723                              |
| 5 to 24   |  | 1,938               | 1,214                              | 1,469               | 494                                | 735                 | 311                                |
| 25 to 49  |  | 760                 | 233                                | 803                 | 705                                | 562                 | 265                                |
| 50 to 99  |  | 543                 | 319                                | 530                 | 433                                | 551                 | 489                                |
| 100 to 249  |  | 423                 | 292                                | 259                 | 295                                | 532                 | 1,080                              |
| 250 to 499  |  | 196                 | 148                                | 229                 | 237                                | 131                 | 260                                |
| 500 to 999  |  | 85                  | 94                                 | 186                 | 111                                | 158                 | 248                                |
| 1,000 to 4,999  |  | 167                 | 1,168                              | 223                 | 6,347                              | 150                 | 1,104                              |
| 5,000 to 9,999  |  | 61                  | 1,087                              | 64                  | 986                                | 47                  | 1,021                              |
| 10,000 to 24,999  |  | 38                  | 1,557                              | 37                  | 2,535                              | 34                  | 1,702                              |
| 25,000 or more  |  | 33                  | 3,128                              | 32                  | 2,642                              | 39                  | 2,242                              |

<sup>1</sup> Some statistics for 1999 have been revised since originally published.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.  
 (S) = Indicates imputation of more than 50 percent.  
 (-) = Indicates data not collected.

NOTES: The R&D in this table is the industrial R&D performed outside company facilities funded from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and State governments. Excluded from this table is company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations).

For 1999, 2000, and 2001, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. For 1999 and 2000, statistics previously published for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-11. Company and other non-Federal funds for industrial R&D performance outside of the U.S. and number of companies with subsidiaries that performed industrial R&D both within and outside of the U.S., by industry and size of company: 1999-2001

Page 1 of 3

Page 1 of 1

| Industry and size of company                                     | NAICS codes                               | 1999 <sup>1</sup>   |                          | 2000                |                          | 2001                |                          |
|--|---|---------------------|--------------------------|---------------------|--------------------------|---------------------|--------------------------|
|  |   |                     | Amount                   |                     | Amount                   |                     | Amount                   |
|  |   | Number of companies | [In millions of dollars] | Number of companies | [In millions of dollars] | Number of companies | [In millions of dollars] |
| Distribution by industry:  |   |                     |                          |                     |                          |                     |                          |
| All industries   | 21-23, 31-33, 42, 44-81                   | 1,261               | 16,765                   | 1,718               | 17,463                   | 2,407               | 17,869                   |
| Manufacturing  | 31-33                                     | 747                 | 12,354                   | 572                 | 12,252                   | 593                 | 10,998                   |
| Food   | 311                                       | 9                   | 87                       | 16                  | 95 (S)                   | 21                  | 210                      |
| Beverage and tobacco products                                    | 312                                       | 1                   | (D)                      | 1                   | (D)                      | 0                   | 0                        |
| Textiles, apparel, and leather                                   | 313-16                                    | 7                   | (D)                      | 15                  | (D)                      | 8                   | 26                       |
| Wood products  | 321                                       | 1                   | (D)                      | 0                   | 0                        | 2                   | (D)                      |
| Paper, printing and support activities                           | 322, 323                                  | 11                  | (D)                      | 9                   | (D)                      | 8                   | (D)                      |
| Petroleum and coal products                                      | 324                                       | 3                   | (D)                      | 3                   | 9                        | 2                   | (D)                      |
| Chemicals  | 325                                       | 105                 | 3,243                    | 94                  | 3,578                    | 60                  | 2,328                    |
| Basic chemicals  | 3251                                      | 15                  | (D)                      | 40                  | 256                      | 15                  | 152                      |
| Resin, synthetic rubber, fibers, and filament                    | 3252                                      | 7                   | (D)                      | 4                   | (D)                      | 6                   | (D)                      |
| Pharmaceuticals and medicines                                    | 3254                                      | 64                  | 2,832                    | 20                  | 3,030                    | 19                  | 1,720                    |
| Other chemicals  | 325 minus (3251-52, 3254)                 | 18                  | 95                       | 30                  | (D)                      | 20                  | (D)                      |
| Plastics and rubber products                                     | 326                                       | 42                  | 172                      | 23                  | 168                      | 37                  | 181                      |
| Nonmetallic mineral products                                     | 327                                       | 5                   | 40                       | 14                  | 40                       | 8                   | 15                       |
| Primary metals   | 331                                       | 5                   | 7                        | 3                   | (D)                      | 15                  | 12                       |
| Fabricated metal products  | 332                                       | 42                  | 75                       | 32                  | 65                       | 20                  | 61                       |
| Machinery  | 333                                       | 70                  | 707                      | 86                  | 736                      | 66                  | 527                      |
| Computer and electronic products                                 | 334                                       | 177                 | 1,902                    | 178                 | 1,705                    | 219                 | 2,562                    |
| Computers and peripheral equipment                               | 3341                                      | 12                  | 289                      | 25                  | (D)                      | 16                  | 478 (S)                  |
| Communications equipment   | 3342                                      | 22                  | (D)                      | 33                  | 377                      | 55                  | 633                      |
| Semiconductor and other electronic components                    | 3344                                      | 98                  | 302                      | 34                  | 327                      | 86                  | 852                      |
| Navigational, measuring, electromedical, and control instruments | 3345                                      | 42                  | 1,112                    | 85                  | 679                      | 59                  | 586                      |
| Other computer and electronic products                           | 334 minus (3341-42, 3344-45)              | 2                   | (D)                      | 1                   | (D)                      | 3                   | 12                       |
| Electrical equipment, appliances, and components                 | 335                                       | 33                  | 433                      | 20                  | 455                      | 23                  | 418 (S)                  |
| Transportation equipment   | 336                                       | 90                  | 3,933                    | 27                  | 3,640                    | 22                  | 2,832                    |
| Motor vehicles, trailers, and parts                              | 3361-63                                   | 64                  | (D)                      | 21                  | (D)                      | 15                  | (D)                      |
| Aerospace products and parts                                     | 3364                                      | 6                   | (D)                      | 3                   | (D)                      | 4                   | 138                      |
| Other transportation equipment                                   | 336 minus (3361-64)                       | 20                  | 17                       | 3                   | (D)                      | 3                   | (D)                      |
| Furniture and related products                                   | 337                                       | 2                   | (D)                      | 5                   | (D)                      | 1                   | (D)                      |
| Miscellaneous manufacturing                                      | 339                                       | 47                  | 963                      | 47                  | 942                      | 83                  | 1,226                    |
| Medical equipment and supplies                                   | 3391                                      | 38                  | (D)                      | 26                  | (D)                      | 67                  | 1,150                    |
| Other miscellaneous manufacturing                                | 339 minus (3391)                          | 8                   | (D)                      | 21                  | (D)                      | 16                  | 76                       |
| Other manufacturing  | 31-33 minus (311-16, 321-27, 331-37, 339) | --                  | --                       | --                  | --                       | --                  | --                       |

See explanatory information and SOURCE at end of table.

Table A-11. Company and other non-Federal funds for industrial R&D performance outside of the U.S. and number of companies with subsidiaries that performed industrial R&D both within and outside of the U.S., by industry and size of company: 1999-2001

Page 2 of 3

| Industry and size of company                           | NAICS codes                 | 1999 <sup>1</sup>   |                                 | 2000                |                                 | 2001                |                                 |
|--|-----------------------------|---------------------|---------------------------------|---------------------|---------------------------------|---------------------|---------------------------------|
|  |                             | Number of companies | Amount [In millions of dollars] | Number of companies | Amount [In millions of dollars] | Number of companies | Amount [In millions of dollars] |
| Distribution by industry:                              |                             |                     |                                 |                     |                                 |                     |                                 |
| Nonmanufacturing                                       | 21-23, 42, 44-81            | 513                 | 4,411                           | 1,146               | 5,211                           | 1,814               | 6,871                           |
| Mining, extraction, and support activities             | 21                          | 52                  | 48                              | 6                   | 43                              | 7                   | 37                              |
| Utilities  | 22                          | 0                   | 0                               | 0                   | 0                               | 0                   | 0                               |
| Construction   | 23                          | 1                   | (D)                             | 1                   | (D)                             | 2                   | (D)                             |
| Trade  | 42, 44, 45                  | 93                  | 2,356                           | 345                 | 2,244                           | 447                 | 4,192                           |
| Transportation and warehousing                         | 48, 49                      | 0                   | 0                               | 0                   | 0                               | 0                   | 0                               |
| Information  | 51                          | 108                 | 1,379                           | 135                 | 1,564                           | 345                 | 1,672                           |
| Publishing   | 511                         | 101                 | 637                             | 118                 | 940                             | 336                 | 983                             |
| Newspaper, periodical, book, and database              | 5111                        | 0                   | 0                               | 2                   | (D)                             | 5                   | 8                               |
| Software   | 5112                        | 101                 | 637                             | 116                 | (D)                             | 331                 | 975                             |
| Broadcasting and telecommunications                    | 513                         | 1                   | (D)                             | 1                   | (D)                             | 1                   | (D)                             |
| Radio and television broadcasting                      | 5131                        | 0                   | 0                               | 0                   | 0                               | 0                   | 0                               |
| Telecommunications                                     | 5133                        | 1                   | (D)                             | 1                   | (D)                             | 1                   | (D)                             |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)      | 0                   | 0                               | 0                   | 0                               | 0                   | 0                               |
| Other information                                      | 51 minus (511, 513)         | 6                   | (D)                             | 16                  | (D)                             | 8                   | (D)                             |
| Finance, insurance, and real estate                    | 52, 53                      | 3                   | (D)                             | 4                   | (D)                             | 6                   | 24                              |
| Professional, scientific, and technical services       | 54                          | 196                 | 523                             | 236                 | 904                             | 943                 | 881                             |
| Architectural, engineering, and related services       | 5413                        | 47                  | (D)                             | 54                  | 371                             | 193                 | 78                              |
| Computer systems design and related services           | 5415                        | 67                  | 146                             | 101                 | (D)                             | 149                 | 302                             |
| Scientific R&D services                                | 5417                        | 81                  | 287                             | 80                  | 292                             | 592                 | 488                             |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417) | 1                   | (D)                             | 1                   | (D)                             | 9                   | 12                              |
| Management of companies and enterprises                | 55                          | 2                   | 18                              | 5                   | (D)                             | 2                   | (D)                             |
| Health care services                                   | 621-23                      | 2                   | (D)                             | 1                   | (D)                             | 2                   | (D)                             |
| Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81     | 55                  | 14                              | 7                   | 75 (S)                          | 60                  | 43                              |

See explanatory information and SOURCE at end of table.



Table A-11. Company and other non-Federal funds for industrial R&D performance outside of the U.S. and number of companies with subsidiaries that performed industrial R&D both within and outside of the U.S., by industry and size of company: 1999-2001

Page 3 of 3

Page 2 of 3

| Industry and size of company                              |  | 1999 <sup>1</sup>   |                                 | 2000                |                                 | 2001                |                                 |
|---|--|---------------------|---------------------------------|---------------------|---------------------------------|---------------------|---------------------------------|
|   |  | Number of companies | Amount [In millions of dollars] | Number of companies | Amount [In millions of dollars] | Number of companies | Amount [In millions of dollars] |
| Distribution by size of company:<br>[Number of employees] |  |                     |                                 |                     |                                 |                     |                                 |
| Total   |  | 1,261               | 16,765                          | 1,718               | 17,463                          | 2,407               | 17,869                          |
| 5 to 24   |  | 46                  | 1                               | 484                 | 352                             | 1,050               | 96                              |
| 25 to 49  |  | 51                  | 14                              | 86                  | 37                              | 269                 | 21                              |
| 50 to 99  |  | 231                 | 117                             | 188                 | 455                             | 301                 | 228                             |
| 100 to 249  |  | 264                 | 140                             | 246                 | 421                             | 149                 | 223                             |
| 250 to 499  |  | 144                 | 243                             | 132                 | 162                             | 93                  | 207                             |
| 500 to 999  |  | 156                 | 860                             | 188                 | 532                             | 134                 | 647                             |
| 1,000 to 4,999  |  | 204                 | 2,099                           | 228                 | 2,238                           | 251                 | 2,104                           |
| 5,000 to 9,999  |  | 81                  | 1,188                           | 74                  | 1,352                           | 74                  | 2,073                           |
| 10,000 to 24,999  |  | 48                  | 2,965                           | 49                  | 3,626                           | 44                  | 3,329                           |
| 25,000 or more  |  | 35                  | 9,138                           | 42                  | 8,288                           | 43                  | 8,940                           |

<sup>1</sup> Some statistics for 1999 have been revised since originally published.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

(-) = Indicates data not collected.

NOTES: The R&D in this table is the industrial R&D performed outside the 50 U.S. states and D.C. by a company's foreign subsidiaries or other foreign organizations funded from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and State governments. Excluded from this table is company-funded R&D performed within the 50 U.S. states and D.C. (e.g., R&D performed on U.S. soil by foreign subsidiaries or other foreign organizations).

For 1999, 2000, and 2001, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. For 1999 and 2000, statistics previously published for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

**Table A-12. Company and other non-Federal funds for industrial R&D performance outside of the U.S.<sup>1</sup>, by location of R&D performance: 2001**

| Location of R&D performance | Number of companies <sup>2</sup> | Total<br>[In millions of dollars] |
|-----------------------------|----------------------------------|-----------------------------------|
| Total                       | 2,407                            | 17,869                            |
| Canada                      | 153                              | 1,935                             |
| Germany                     | 142                              | 1,848                             |
| France                      | 127                              | 984                               |
| Japan                       | 91                               | 1,089                             |
| United Kingdom              | 233                              | 1,888                             |
| Puerto Rico                 | 18                               | 198 (S)                           |
| Other countries             | 277                              | 3,383                             |
| Undistributed <sup>3</sup>  | 2,051                            | 6,704                             |

<sup>1</sup> Outside of the 50 U.S. states and D.C.

<sup>2</sup> Detail does not add to total because categories are not mutually exclusive.

<sup>3</sup> Includes R&D reported on Form RD-1 that was not allocated to specific locations outside of the 50 U.S. states and D.C. Also includes total R&D performed in locations outside of the 50 U.S. states and D.C. reported on Form RD-1A because Form RD-1A does not collect data by location.

KEY: (S) = Indicates imputation of more than 50 percent.

NOTES: Data are reported in current U.S. dollars.

The R&D in this table is the industrial R&D performed outside the 50 U.S. states and D.C. by a company's foreign subsidiaries or other foreign organizations funded from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and State governments. Excluded from this table is company-funded R&D performed within the 50 U.S. states or D.C. by foreign subsidiaries or other foreign organizations.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-13. Federal funds for industrial R&amp;D performance in the U.S., by industry and size of company: 1999-2001

Page 1 of 3

Page 1 of 3

| Industry and size of company                                     | NAICS codes                               | 1999 <sup>1</sup>        | 2000   | 2001 <sup>2</sup> |
|--|---|--------------------------|--------|-------------------|
|  |   | [In millions of dollars] |        |                   |
| Distribution by industry:  |   |                          |        |                   |
| All industries   | 21-23, 31-33, 42, 44-81                   | 22,535                   | 19,118 | 16,899            |
| Manufacturing  | 31-33                                     | 17,055                   | 13,328 | 11,484            |
| Food   | 311                                       | 0                        | (D)    | 0                 |
| Beverage and tobacco products                                    | 312                                       | 0                        | 0      | 0                 |
| Textiles, apparel, and leather                                   | 313-16                                    | 0                        | (D)    | (D)               |
| Wood products  | 321                                       | 0                        | 0      | 0                 |
| Paper, printing and support activities                           | 322, 323                                  | (D)                      | (D)    | (D)               |
| Petroleum and coal products                                      | 324                                       | (D)                      | (D)    | (D)               |
| Chemicals  | 325                                       | 194                      | 150    | 180               |
| Basic chemicals  | 3251                                      | 98                       | 31     | 42                |
| Resin, synthetic rubber, fibers, and filament                    | 3252                                      | (D)                      | 11     | (D)               |
| Pharmaceuticals and medicines                                    | 3254                                      | (D)                      | (D)    | 0                 |
| Other chemicals  | 325 minus (3251-52, 3254)                 | (D)                      | (D)    | (D)               |
| Plastics and rubber products                                     | 326                                       | 0                        | (D)    | (D)               |
| Nonmetallic mineral products                                     | 327                                       | (D)                      | 1      | 11                |
| Primary metals   | 331                                       | 12                       | 26 (S) | 6                 |
| Fabricated metal products  | 332                                       | 46                       | 41     | 54                |
| Machinery  | 333                                       | 399 (S)                  | 41     | 67                |
| Computer and electronic products                                 | 334                                       | 5,993                    | 5,544  | 5,848             |
| Computers and peripheral equipment                               | 3341                                      | (D)                      | 0      | (D)               |
| Communications equipment   | 3342                                      | 206                      | 432    | 298               |
| Semiconductor and other electronic components                    | 3344                                      | 77                       | 107    | 148               |
| Navigational, measuring, electromedical, and control instruments | 3345                                      | 5,705                    | 5,002  | 5,382             |
| Other computer and electronic products                           | 334 minus (3341-42, 3344-45)              | (D)                      | 3      | (D)               |
| Electrical equipment, appliances, and components                 | 335                                       | (D)                      | (D)    | 301 (S)           |
| Transportation equipment   | 336                                       | 10,037                   | 7,168  | 4,961             |
| Motor vehicles, trailers, and parts                              | 3361-63                                   | (D)                      | (D)    | (D)               |
| Aerospace products and parts                                     | 3364                                      | 9,117                    | 6,424  | 3,785             |
| Other transportation equipment                                   | 336 minus (3361-64)                       | (D)                      | (D)    | (D)               |
| Furniture and related products                                   | 337                                       | 0                        | 0      | 0                 |
| Miscellaneous manufacturing                                      | 339                                       | 26                       | 12     | 25                |
| Medical equipment and supplies                                   | 3391                                      | (D)                      | (D)    | (D)               |
| Other miscellaneous manufacturing                                | 339 minus (3391)                          | (D)                      | (D)    | (D)               |
| Other manufacturing  | 31-33 minus (311-16, 321-27, 331-37, 339) | --                       | --     | --                |

See explanatory information and SOURCE at end of table.

Table A-13. Federal funds for industrial R&amp;D performance in the U.S., by industry and size of company: 1999-2001

Page 2 of 3

Page 2 of 3

| Industry and size of company                           | NAICS codes                 | 1999 <sup>1</sup>        | 2000    | 2001 <sup>2</sup> |
|--|-----------------------------|--------------------------|---------|-------------------|
|  |                             | [In millions of dollars] |         |                   |
| Distribution by industry:                              |                             |                          |         |                   |
| Nonmanufacturing                                       | 21-23, 42, 44-81            | 5,479                    | 5,790   | 5,415             |
| Mining, extraction, and support activities             | 21                          | (D)                      | 1       | (D)               |
| Utilities  | 22                          | 17                       | (D)     | 19                |
| Construction   | 23                          | 2                        | (D)     | 1                 |
| Trade  | 42, 44, 45                  | 95                       | 30      | 88                |
| Transportation and warehousing                         | 48, 49                      | 0                        | (D)     | 72                |
| Information  | 51                          | 497                      | 540 (S) | (D)               |
| Publishing   | 511                         | 49                       | 78      | 44                |
| Newspaper, periodical, book, and database              | 5111                        | 0                        | 0       | 0                 |
| Software   | 5112                        | 49                       | 78      | 44                |
| Broadcasting and telecommunications                    | 513                         | (D)                      | 382 (S) | (D)               |
| Radio and television broadcasting                      | 5131                        | (D)                      | (D)     | 0                 |
| Telecommunications                                     | 5133                        | (D)                      | (D)     | (D)               |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)      | 13                       | 0       | 0                 |
| Other information                                      | 51 minus (511, 513)         | (D)                      | 81      | (D)               |
| Finance, insurance, and real estate                    | 52, 53                      | (D)                      | 0       | (D)               |
| Professional, scientific, and technical services       | 54                          | 4,615                    | 4,628   | 5,065             |
| Architectural, engineering, and related services       | 5413                        | 1,177                    | 1,149   | 1,021             |
| Computer systems design and related services           | 5415                        | (D)                      | 226     | 498               |
| Scientific R&D services                                | 5417                        | 3,057                    | 3,177   | 3,352             |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417) | (D)                      | 77      | 194               |
| Management of companies and enterprises                | 55                          | (D)                      | 0       | 0                 |
| Health care services                                   | 621-23                      | 10                       | 59      | 29                |
| Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81     | (D)                      | 18      | 38                |

See explanatory information and SOURCE at end of table.

Table A-13. Federal funds for industrial R&amp;D performance in the U.S., by industry and size of company: 1999-2001

Page 3 of 3

Page 3 of 4

| Industry and size of company                              |  | 1999 <sup>1</sup>        | 2000   | 2001 <sup>2</sup> |
|---|--|--------------------------|--------|-------------------|
|   |  | [In millions of dollars] |        |                   |
| Distribution by size of company:<br>[Number of employees] |  |                          |        |                   |
| Total   |  | 22,535                   | 19,118 | 16,899            |
| 5 to 24   |  | 611                      | 922    | 653               |
| 25 to 49  |  | 368                      | 222    | 201               |
| 50 to 99  |  | 603                      | 514    | 548               |
| 100 to 249  |  | 674                      | 669    | 903               |
| 250 to 499  |  | 485                      | 660    | 560               |
| 500 to 999  |  | 591                      | 495    | 627               |
| 1,000 to 4,999  |  | 896                      | 775    | 608               |
| 5,000 to 9,999  |  | 2,194                    | 1,625  | 1,651             |
| 10,000 to 24,999  |  | 397                      | 678    | 904               |
| 25,000 or more  |  | 15,717                   | 12,559 | 10,243            |

<sup>1</sup> Some statistics for 1999 have been revised since originally published.

<sup>2</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

(--) = Indicates data not collected.

NOTES: The R&D in this table is the industrial R&D performed within company facilities funded by the Federal Government. Excluded from this table are R&D not performed within the company (e.g., R&D contracted out to other organizations) and R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations).

For 1999, 2000, and 2001, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. For 1999 and 2000, statistics previously published for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-14. Federal funds for industrial R&amp;D performance in the U.S., by industry, by size of company: 2001

| Industry   | NAICS codes                  | Total <sup>1</sup> | Size of company [number of employees] |       |       |        |        |         |          |          |           |         |
|--|------------------------------|--------------------|---------------------------------------|-------|-------|--------|--------|---------|----------|----------|-----------|---------|
|  |                              |                    | 5 to                                  | 25 to | 50 to | 100 to | 250 to | 500 to  | 1,000 to | 5,000 to | 10,000 to | 25,000  |
|  |                              |                    | 24                                    | 49    | 99    | 249    | 499    | 999     | 4,999    | 9,999    | 24,999    | or more |
| [In millions of dollars]   |                              |                    |                                       |       |       |        |        |         |          |          |           |         |
| Distribution by industry:  |                              |                    |                                       |       |       |        |        |         |          |          |           |         |
| All industries   | 21-23, 31-33, 42, 44-81      | 16,899             | 653                                   | 201   | 548   | 903    | 560    | 627     | 608      | 1,651    | 904       | 10,243  |
| Manufacturing  | 31-33                        | 11,484             | 109                                   | 13    | 103   | 87     | 17     | 164     | 107      | 678      | 885       | 9,320   |
| Food   | 311                          | 0                  | 0                                     | 0     | 0     | 0      | 0      | 0       | 0        | 0        | 0         | 0       |
| Beverage and tobacco products                                    | 312                          | 0                  | 0                                     | 0     | 0     | 0      | 0      | 0       | 0        | 0        | 0         | 0       |
| Textiles, apparel, and leather                                   | 313-16                       | (D)                | 0                                     | 0     | 0     | 0      | (D)    | 0       | 0        | 0        | 0         | 0       |
| Wood products  | 321                          | 0                  | 0                                     | 0     | 0     | 0      | 0      | 0       | 0        | 0        | 0         | 0       |
| Paper, printing and support activities                           | 322, 323                     | (D)                | 0                                     | 0     | 0     | 0      | 0      | 0       | 0        | 0        | 0         | (D)     |
| Petroleum and coal products                                      | 324                          | (D)                | 0                                     | 0     | 0     | 0      | 0      | 0       | 0        | 0        | 0         | (D)     |
| Chemicals  | 325                          | 180                | 8                                     | 0     | 2     | (D)    | 0      | (D)     | 4        | 10       | (D)       | (D)     |
| Basic chemicals  | 3251                         | 42                 | 8                                     | 0     | 2     | (D)    | 0      | 0       | (D)      | 10       | (D)       | 0       |
| Resin, synthetic rubber, fibers, and filament                    | 3252                         | (D)                | 0                                     | 0     | 0     | 0      | 0      | 0       | (D)      | 0        | (D)       | (D)     |
| Pharmaceuticals and medicines                                    | 3254                         | 0                  | 0                                     | 0     | 0     | 0      | 0      | 0       | 0        | 0        | 0         | 0       |
| Other chemicals  | 325 minus (3251-52, 3254)    | (D)                | 0                                     | 0     | 0     | 0      | 0      | (D)     | 0        | 0        | (D)       | (D)     |
| Plastics and rubber products                                     | 326                          | (D)                | 0                                     | 0     | 0     | 0      | 0      | 0       | (D)      | 0        | 0         | 0       |
| Nonmetallic mineral products                                     | 327                          | 11                 | 11                                    | 0     | 0     | 0      | 0      | 0       | (D)      | 0        | (D)       | 0       |
| Primary metals   | 331                          | 6                  | 0                                     | (D)   | (D)   | 0      | 0      | 0       | (D)      | 0        | 0         | (D)     |
| Fabricated metal products  | 332                          | 54                 | 0                                     | 0     | 0     | 1      | 4      | 0       | (D)      | (D)      | 0         | (D)     |
| Machinery  | 333                          | 67                 | 26                                    | 0     | 0     | 0      | 0      | 0       | 1        | (D)      | (D)       | (D)     |
| Computer and electronic products                                 | 334                          | 5,848              | 64                                    | (D)   | (D)   | 23     | (D)    | 117 (S) | 78       | (D)      | (D)       | (D)     |
| Computers and peripheral equipment                               | 3341                         | (D)                | 0                                     | 0     | 0     | (D)    | 0      | (D)     | 0        | 0        | 0         | 0       |
| Communications equipment   | 3342                         | 298                | 0                                     | 0     | 0     | 0      | 0      | (D)     | (D)      | (D)      | 0         | (D)     |
| Semiconductor and other electronic components                    | 3344                         | 148                | 0                                     | (D)   | 0     | 0      | (D)    | 0       | (D)      | 0        | (D)       | (D)     |
| Navigational, measuring, electromedical, and control instruments | 3345                         | 5,382              | 64                                    | 0     | (D)   | (D)    | 5      | (D)     | 42       | (D)      | (D)       | (D)     |
| Other computer and electronic products                           | 334 minus (3341-42, 3344-45) | (D)                | 0                                     | 0     | 0     | 0      | 0      | 0       | 0        | (D)      | 0         | 0       |
| Electrical equipment, appliances, and components                 | 335                          | 301 (S)            | 0                                     | 0     | 0     | 51     | 0      | 7       | (D)      | 0        | (D)       | (D)     |
| Transportation equipment   | 336                          | 4,961              | 0                                     | 0     | 0     | (D)    | 0      | (D)     | (D)      | (D)      | (D)       | 4,528   |
| Motor vehicles, trailers, and parts                              | 3361-63                      | (D)                | 0                                     | 0     | 0     | 0      | 0      | (D)     | 5        | 0        | 0         | (D)     |
| Aerospace products and parts                                     | 3364                         | 3,785              | 0                                     | 0     | 0     | (D)    | 0      | (D)     | (D)      | (D)      | (D)       | 3,362   |
| Other transportation equipment                                   | 336 minus (3361-64)          | (D)                | 0                                     | 0     | 0     | 0      | 0      | 0       | 0        | 0        | 0         | (D)     |
| Furniture and related products                                   | 337                          | 0                  | 0                                     | 0     | 0     | 0      | 0      | 0       | 0        | 0        | 0         | 0       |
| Miscellaneous manufacturing                                      | 339                          | 25                 | 0                                     | 0     | 0     | 3      | 0      | (D)     | (D)      | 0        | (D)       | 0       |

See explanatory information and SOURCE at end of table.

Table A-14. Federal funds for industrial R&amp;D performance in the U.S., by industry, by size of company: 2001

| Industry   | NAICS codes                               | Total <sup>1</sup> | Size of company [number of employees] |       |       |        |        |        |          |          |           |         |
|--|---|--------------------|---------------------------------------|-------|-------|--------|--------|--------|----------|----------|-----------|---------|
|  |   |                    | 5 to                                  | 25 to | 50 to | 100 to | 250 to | 500 to | 1,000 to | 5,000 to | 10,000 to | 25,000  |
|  |   |                    | 24                                    | 49    | 99    | 249    | 499    | 999    | 4,999    | 9,999    | 24,999    | or more |
| [In millions of dollars]                               |   |                    |                                       |       |       |        |        |        |          |          |           |         |
| Distribution by industry:                              |   |                    |                                       |       |       |        |        |        |          |          |           |         |
| Medical equipment and supplies                         | 3391                                      | (D)                | 0                                     | 0     | 0     | 3      | 0      | (D)    | (D)      | 0        | 0         | 0       |
| Other miscellaneous manufacturing                      | 339 minus (3391)                          | (D)                | 0                                     | 0     | 0     | 0      | 0      | 0      | (D)      | 0        | (D)       | 0       |
| Other manufacturing                                    | 31-33 minus (311-16, 321-27, 331-37, 339) | --                 | --                                    | --    | --    | --     | --     | --     | --       | --       | --        | --      |
| Nonmanufacturing                                       | 21-23, 42, 44-81                          | 5,415              | 544                                   | 188   | 445   | 817    | 543    | 463    | 501      | (D)      | 19        | (D)     |
| Mining, extraction, and support activities             | 21  | (D)                | 0                                     | 0     | 0     | 0      | 0      | 0      | 0        | (D)      | 0         | (D)     |
| Utilities  | 22  | 19                 | 0                                     | 0     | 0     | 1      | 0      | 0      | 0        | (D)      | (D)       | (D)     |
| Construction   | 23  | 1                  | 1                                     | 0     | 0     | 0      | 0      | 0      | 0        | 0        | 0         | 0       |
| Trade  | 42, 44, 45                                | 88                 | 65                                    | 0     | (D)   | 0      | 0      | 0      | (D)      | 0        | (D)       | (D)     |
| Transportation and warehousing                         | 48, 49                                    | 72                 | 62                                    | 0     | (D)   | 0      | 0      | 0      | (D)      | 0        | 0         | (D)     |
| Information  | 51  | (D)                | 0                                     | 8     | (D)   | 6 (S)  | 33     | 0      | 0        | 0        | 0         | (D)     |
| Publishing   | 511                                       | 44                 | 0                                     | 8     | (D)   | 6 (S)  | (D)    | 0      | 0        | 0        | 0         | 0       |
| Newspaper, periodical, book, and database              | 5111                                      | 0                  | 0                                     | 0     | 0     | 0      | 0      | 0      | 0        | 0        | 0         | 0       |
| Software   | 5112                                      | 44                 | 0                                     | 8     | (D)   | 6 (S)  | (D)    | 0      | 0        | 0        | 0         | 0       |
| Broadcasting and telecommunications                    | 513                                       | (D)                | 0                                     | 0     | 0     | 0      | 0      | 0      | 0        | 0        | 0         | (D)     |
| Radio and television broadcasting                      | 5131                                      | 0                  | 0                                     | 0     | 0     | 0      | 0      | 0      | 0        | 0        | 0         | 0       |
| Telecommunications                                     | 5133                                      | (D)                | 0                                     | 0     | 0     | 0      | 0      | 0      | 0        | 0        | 0         | (D)     |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)                    | 0                  | 0                                     | 0     | 0     | 0      | 0      | 0      | 0        | 0        | 0         | 0       |
| Other information                                      | 51 minus (511, 513)                       | (D)                | 0                                     | 0     | 0     | 0      | (D)    | 0      | 0        | 0        | 0         | (D)     |
| Finance, insurance, and real estate                    | 52, 53                                    | (D)                | 0                                     | 0     | 0     | 0      | 0      | 0      | 0        | 0        | (D)       | 0       |
| Professional, scientific, and technical services       | 54  | 5,065              | 416                                   | 180   | 415   | 789    | 504    | 450    | 486      | (D)      | 0         | (D)     |
| Architectural, engineering, and related services       | 5413                                      | 1,021              | 83                                    | 10    | 92    | (D)    | 180    | 196    | (D)      | 64       | 0         | (D)     |
| Computer systems design and related services           | 5415                                      | 498                | 0                                     | 10    | 119   | 253    | 33 (S) | (D)    | (D)      | 0        | 0         | (D)     |
| Scientific R&D services                                | 5417                                      | 3,352              | 141                                   | 160   | 205   | 444    | 291    | 175    | 182      | (D)      | 0         | (D)     |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417)               | 194                | 192                                   | 0     | 0     | (D)    | 0      | (D)    | 0        | 0        | 0         | 0       |

See explanatory information and SOURCE at end of table.

Table A-14. Federal funds for industrial R&D performance in the U.S., by industry, by size of company: 2001

| Industry                                | NAICS codes             | Total <sup>1</sup>       | Size of company [number of employees] |             |             |               |               |               |                   |                   |                     |                   |
|---|-------------------------|--------------------------|---------------------------------------|-------------|-------------|---------------|---------------|---------------|-------------------|-------------------|---------------------|-------------------|
|   |                         |                          | 5 to<br>24                            | 25 to<br>49 | 50 to<br>99 | 100 to<br>249 | 250 to<br>499 | 500 to<br>999 | 1,000 to<br>4,999 | 5,000 to<br>9,999 | 10,000 to<br>24,999 | 25,000<br>or more |
|   |                         | [In millions of dollars] |                                       |             |             |               |               |               |                   |                   |                     |                   |
| Distribution by industry:               |                         |                          |                                       |             |             |               |               |               |                   |                   |                     |                   |
| Nonmanufacturing                        |                         |                          |                                       |             |             |               |               |               |                   |                   |                     |                   |
| Management of companies and enterprises | 55                      | 0                        | 0                                     | 0           | 0           | 0             | 0             | 0             | 0                 | 0                 | 0                   |                   |
| Health care services                    | 621-23                  | 29                       | 0                                     | 0           | (D)         | 0             | 0             | 0             | (D)               | 0                 | 0                   |                   |
| Other nonmanufacturing                  | 56, 61, 624, 71, 72, 81 | 38                       | 0                                     | 0           | 0           | 20            | 5             | 13            | 0                 | 0                 | 0                   |                   |

<sup>1</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.  
(S) = Indicates imputation of more than 50 percent.  
(--) = Indicates data not collected.

NOTE: Starting in 1999, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. Statistics for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001



Table A-15. Federal funds for industrial R&D performance in the U.S. and number of companies that performed federally funded R&D in the U.S., by industry and size of company, by size of federally funded R&D program: 2001

| Industry and size of company                                     | NAICS codes                  | Total number of companies | Total amount <sup>1</sup><br>[In millions of dollars] | Size of federally funded R&D program |                                 |                        |                                 |                               |                                 |                                 |                                 |                       |                                 |
|--|------------------------------|---------------------------|---|--------------------------------------|---------------------------------|------------------------|---------------------------------|-------------------------------|---------------------------------|---------------------------------|---------------------------------|-----------------------|---------------------------------|
|  |                              |                           |   | Less than \$200,000                  |                                 | \$200,000 to \$999,999 |                                 | \$ 1 million to \$9.9 million |                                 | \$ 10 million to \$99.9 million |                                 | \$100 million or more |                                 |
|  |                              |                           |   | Number of companies                  | Amount [In millions of dollars] | Number of companies    | Amount [In millions of dollars] | Number of companies           | Amount [In millions of dollars] | Number of companies             | Amount [In millions of dollars] | Number of companies   | Amount [In millions of dollars] |
| Distribution by industry:  |                              |                           |   |                                      |                                 |                        |                                 |                               |                                 |                                 |                                 |                       |                                 |
| All industries   | 21-23, 31-33, 42, 44-81      | 3,212                     | 16,899  | 1,145                                | 105                             | 1,547                  | 578                             | 401                           | 1,183                           | 103                             | 2,254                           | 21                    | 12,780                          |
| Manufacturing  | 31-33                        | 917                       | 11,484  | 497                                  | 50                              | 294                    | 126                             | 93                            | 222                             | 21                              | 587                             | 16                    | 10,499                          |
| Food   | 311                          | 0                         | 0   | 0                                    | 0                               | 0                      | 0                               | 0                             | 0                               | 0                               | 0                               | 0                     | 0                               |
| Beverage and tobacco products                                    | 312                          | 0                         | 0   | 0                                    | 0                               | 0                      | 0                               | 0                             | 0                               | 0                               | 0                               | 0                     | 0                               |
| Textiles, apparel, and leather                                   | 313-16                       | 1                         | (D)   | 0                                    | 0                               | 0                      | 0                               | 1                             | (D)                             | 0                               | 0                               | 0                     | 0                               |
| Wood products  | 321                          | 0                         | 0   | 0                                    | 0                               | 0                      | 0                               | 0                             | 0                               | 0                               | 0                               | 0                     | 0                               |
| Paper, printing and support activities                           | 322, 323                     | 1                         | (D)   | 0                                    | 0                               | 0                      | 0                               | 0                             | 0                               | 1                               | (D)                             | 0                     | 0                               |
| Petroleum and coal products                                      | 324                          | 3                         | (D)   | 2                                    | (D)                             | 0                      | 0                               | 1                             | (D)                             | 0                               | 0                               | 0                     | 0                               |
| Chemicals  | 325                          | 117                       | 180   | 102                                  | (D)                             | 6                      | 3                               | 7                             | 25                              | 1                               | (D)                             | 1                     | (D)                             |
| Basic chemicals  | 3251                         | 111                       | 42  | 100                                  | (D)                             | 6                      | 3                               | 4                             | 12                              | 1                               | (D)                             | 0                     | 0                               |
| Resin, synthetic rubber, fibers, and filament                    | 3252                         | 3                         | (D)   | 0                                    | (D)                             | 0                      | 0                               | 3                             | 13                              | 0                               | 0                               | 0                     | 0                               |
| Pharmaceuticals and medicines                                    | 3254                         | 0                         | 0   | 0                                    | 0                               | 0                      | 0                               | 0                             | 0                               | 0                               | 0                               | 0                     | 0                               |
| Other chemicals  | 325 minus (3251-52, 3254)    | 3                         | (D)   | 2                                    | (D)                             | 0                      | 0                               | 0                             | 0                               | 0                               | 0                               | 1                     | (D)                             |
| Plastics and rubber products                                     | 326                          | 1                         | (D)   | 1                                    | (D)                             | 0                      | 0                               | 0                             | 0                               | 0                               | 0                               | 0                     | 0                               |
| Nonmetallic mineral products                                     | 327                          | 101                       | 11  | 101                                  | 11                              | 0                      | 0                               | 0                             | 0                               | 0                               | 0                               | 0                     | 0                               |
| Primary metals   | 331                          | 5                         | 6   | 1                                    | (D)                             | 2                      | (D)                             | 2                             | (D)                             | 0                               | 0                               | 0                     | 0                               |
| Fabricated metal products  | 332                          | 18                        | 54  | 8                                    | 1                               | 7                      | 3                               | 2                             | (D)                             | 1                               | (D)                             | 0                     | 0                               |
| Machinery  | 333                          | 109                       | 67  | 0                                    | 0                               | 103                    | 27                              | 0                             | (D)                             | 2                               | (D)                             | 0                     | 0                               |
| Computer and electronic products                                 | 334                          | 366                       | 5,848   | 123                                  | 20                              | 170                    | 89                              | 61                            | 119                             | 6                               | 187                             | 6                     | 5,432                           |
| Computers and peripheral equipment                               | 3341                         | 2                         | (D)   | 0                                    | 0                               | 0                      | 0                               | 1                             | (D)                             | 1                               | (D)                             | 0                     | 0                               |
| Communications equipment   | 3342                         | 7                         | 298   | 0                                    | 0                               | 1                      | (D)                             | 2                             | (D)                             | 3                               | 136                             | 1                     | (D)                             |
| Semiconductor and other electronic components                    | 3344                         | 20                        | 148   | 0                                    | 0                               | 17                     | 13                              | 2                             | (D)                             | 0                               | 0                               | 1                     | (D)                             |
| Navigational, measuring, electromedical, and control instruments | 3345                         | 336                       | 5,382   | 123                                  | 20                              | 151                    | (D)                             | 56                            | 100                             | 2                               | (D)                             | 4                     | 5,151                           |
| Other computer and electronic products                           | 334 minus (3341-42, 3344-45) | 1                         | (D)   | 0                                    | 0                               | 1                      | (D)                             | 0                             | 0                               | 0                               | 0                               | 0                     | 0                               |
| Electrical equipment, appliances, and components                 | 335                          | 67                        | 301 (S)   | 51                                   | 7                               | 1                      | (D)                             | 11                            | 37                              | 3                               | 63                              | 1                     | (D)                             |
| Transportation equipment   | 336                          | 21                        | 4,961   | 0                                    | 0                               | 2                      | (D)                             | 6                             | (D)                             | 5                               | 186                             | 8                     | 4,749                           |

See explanatory information and SOURCE at end of table.

Table A-15. Federal funds for industrial R&D performance in the U.S. and number of companies that performed federally funded R&D in the U.S., by industry and size of company, by size of federally funded R&D program: 2001

| Industry and size of company                     | NAICS codes                               | Total number of companies | Total amount <sup>1</sup><br>[In millions of dollars] | Size of federally funded R&D program |                                 |                        |                                 |                               |                                 |                                 |                                 |                       |                                 |
|--|---|---------------------------|---|--------------------------------------|---------------------------------|------------------------|---------------------------------|-------------------------------|---------------------------------|---------------------------------|---------------------------------|-----------------------|---------------------------------|
|  |   |                           |   | Less than \$200,000                  |                                 | \$200,000 to \$999,999 |                                 | \$ 1 million to \$9.9 million |                                 | \$ 10 million to \$99.9 million |                                 | \$100 million or more |                                 |
|  |   |                           |   | Number of companies                  | Amount [In millions of dollars] | Number of companies    | Amount [In millions of dollars] | Number of companies           | Amount [In millions of dollars] | Number of companies             | Amount [In millions of dollars] | Number of companies   | Amount [In millions of dollars] |
| Distribution by industry:                        |   |                           |   |                                      |                                 |                        |                                 |                               |                                 |                                 |                                 |                       |                                 |
| Motor vehicles, trailers, and parts              | 3361-63                                   | 8                         | (D)   | 0                                    | 0                               | 1                      | (D)                             | 5                             | 16                              | 1                               | (D)                             | 1                     | (D)                             |
| Aerospace products and parts                     | 3364                                      | 12                        | 3,785   | 0                                    | 0                               | 1                      | (D)                             | 1                             | (D)                             | 3                               | 74                              | 7                     | 3,701                           |
| Other transportation equipment                   | 336 minus (3361-64)                       | 1                         | (D)   | 0                                    | 0                               | 0                      | 0                               | 0                             | 0                               | 1                               | (D)                             | 0                     | (D)                             |
| Furniture and related products                   | 337                                       | 0                         | 0   | 0                                    | 0                               | 0                      | 0                               | 0                             | 0                               | 0                               | 0                               | 0                     | 0                               |
| Miscellaneous manufacturing                      | 339                                       | 107                       | 25  | 101                                  | 0                               | 2                      | (D)                             | 2                             | 3                               | 2                               | (D)                             | 0                     | 0                               |
| Medical equipment and supplies                   | 3391                                      | 105                       | (D)   | 101                                  | 0                               | 1                      | (D)                             | 2                             | 3                               | 1                               | (D)                             | 0                     | 0                               |
| Other miscellaneous manufacturing                | 339 minus (3391)                          | 2                         | (D)   | 0                                    | 0                               | 1                      | (D)                             | 0                             | 0                               | 1                               | (D)                             | 0                     | 0                               |
| Other manufacturing                              | 31-33 minus (311-16, 321-27, 331-37, 339) | --                        | --  | --                                   | --                              | --                     | --                              | --                            | --                              | --                              | --                              | --                    | --                              |
| Nonmanufacturing                                 | 21-23, 42, 44-81                          | 2,295                     | 5,415   | 648                                  | 55                              | 1,253                  | 451                             | 308                           | 961                             | 82                              | 1,666                           | 5                     | 2,281                           |
| Mining, extraction, and support activities       | 21  | 2                         | (D)   | 1                                    | (D)                             | 1                      | (D)                             | 0                             | 0                               | 0                               | 0                               | 0                     | 0                               |
| Utilities  | 22  | 51                        | 19  | 48                                   | 1                               | 2                      | (D)                             | 0                             | 0                               | 1                               | (D)                             | 0                     | 0                               |
| Construction                                     | 23  | 50                        | 1   | 50                                   | 0                               | 0                      | 0                               | 0                             | 0                               | 0                               | 0                               | 0                     | 0                               |
| Trade  | 42, 44, 45                                | 255                       | 88  | 0                                    | 0                               | 250                    | 65                              | 4                             | (D)                             | 1                               | (D)                             | 0                     | 0                               |
| Transportation and warehousing                   | 48, 49                                    | 253                       | 72  | 2                                    | (D)                             | 250                    | 62                              | 0                             | 0                               | 1                               | (D)                             | 0                     | 0                               |
| Information                                      | 51  | 59                        | (D)   | 50                                   | 8                               | 2                      | (D)                             | 4                             | (D)                             | 3                               | 60                              | 0                     | 0                               |
| Publishing                                       | 511                                       | 56                        | 44  | 50                                   | 8                               | 2                      | (D)                             | 3                             | 15                              | 1                               | (D)                             | 0                     | 0                               |
| Newspaper, periodical, book, and database        | 5111                                      | 0                         | 0   | 0                                    | 0                               | 0                      | 0                               | 0                             | 0                               | 0                               | 0                               | 0                     | 0                               |
| Software   | 5112                                      | 56                        | 44  | 50                                   | 8                               | 2                      | (D)                             | 3                             | 15                              | 1                               | (D)                             | 0                     | 0                               |
| Broadcasting and telecommunications              | 513                                       | 1                         | (D)   | 0                                    | 0                               | 0                      | 0                               | 0                             | 0                               | 1                               | (D)                             | 0                     | 0                               |
| Radio and television broadcasting                | 5131                                      | 0                         | 0   | 0                                    | 0                               | 0                      | 0                               | 0                             | 0                               | 0                               | 0                               | 0                     | 0                               |
| Telecommunications                               | 5133                                      | 1                         | (D)   | 0                                    | 0                               | 0                      | 0                               | 0                             | 0                               | 1                               | (D)                             | 0                     | 0                               |
| Other broadcasting and telecommunications        | 513 minus (5131, 5133)                    | 0                         | 0   | 0                                    | 0                               | 0                      | 0                               | 0                             | 0                               | 0                               | 0                               | 0                     | 0                               |
| Other information                                | 51 minus (511, 513)                       | 2                         | (D)   | 0                                    | 0                               | 0                      | 0                               | 1                             | (D)                             | 1                               | (D)                             | 0                     | 0                               |
| Finance, insurance, and real estate              | 52, 53                                    | 1                         | (D)   | 0                                    | 0                               | 0                      | 0                               | 0                             | 0                               | 1                               | (D)                             | 0                     | 0                               |
| Professional, scientific, and technical services | 54  | 1,318                     | 5,065   | 294                                  | 35                              | 648                    | 293                             | 298                           | 927                             | 73                              | 1,529                           | 5                     | 2,281                           |

See explanatory information and SOURCE at end of table.

Table A-15. Federal funds for industrial R&D performance in the U.S. and number of companies that performed federally funded R&D in the U.S., by industry and size of company, by size of federally funded R&D program: 2001

| Industry and size of company                              | NAICS codes                 | Total number of companies | Total amount <sup>1</sup><br>[In millions of dollars] | Size of federally funded R&D program |                                 |                        |                                 |                               |                                 |                                 |                                 |                       |                                 |
|---|-----------------------------|---------------------------|---|--------------------------------------|---------------------------------|------------------------|---------------------------------|-------------------------------|---------------------------------|---------------------------------|---------------------------------|-----------------------|---------------------------------|
|   |                             |                           |   | Less than \$200,000                  |                                 | \$200,000 to \$999,999 |                                 | \$ 1 million to \$9.9 million |                                 | \$ 10 million to \$99.9 million |                                 | \$100 million or more |                                 |
|   |                             |                           |   | Number of companies                  | Amount [In millions of dollars] | Number of companies    | Amount [In millions of dollars] | Number of companies           | Amount [In millions of dollars] | Number of companies             | Amount [In millions of dollars] | Number of companies   | Amount [In millions of dollars] |
| Distribution by industry:                                 |                             |                           |   |                                      |                                 |                        |                                 |                               |                                 |                                 |                                 |                       |                                 |
| Architectural, engineering, and related services          | 5413                        | 109                       | 1,021   | 6                                    | 0                               | 8                      | 4                               | 77                            | (D)                             | 16                              | 422                             | 2                     | (D)                             |
| Computer systems design and related services              | 5415                        | 91                        | 498   | 9                                    | 1                               | 23                     | 9                               | 33                            | 146                             | 27                              | 343                             | 0                     | 0                               |
| Scientific R&D services                                   | 5417                        | 817                       | 3,352   | 280                                  | 34                              | 317                    | 88                              | 187                           | 610                             | 30                              | 763                             | 3                     | 1,857                           |
| Other professional, scientific, and technical services    | 54 minus (5413, 5415, 5417) | 301                       | (D)   | 0                                    | 0                               | 300                    | (D)                             | 1                             | (D)                             | 0                               | 0                               | 0                     | 0                               |
| Management of companies and enterprises                   | 55                          | 0                         | 0   | 0                                    | 0                               | 0                      | 0                               | 0                             | 0                               | 0                               | 0                               | 0                     | 0                               |
| Health care services                                      | 621-23                      | 104                       | 29  | 52                                   | (D)                             | 50                     | 12                              | 1                             | (D)                             | 1                               | (D)                             | 0                     | 0                               |
| Other nonmanufacturing                                    | 56, 61, 624, 71, 72, 81     | 202                       | 38  | 150                                  | (D)                             | 50                     | 17                              | 1                             | (D)                             | 1                               | (D)                             | 0                     | 0                               |
| Distribution by size of company:<br>[Number of employees] |                             |                           |   |                                      |                                 |                        |                                 |                               |                                 |                                 |                                 |                       |                                 |
| Total   |                             | 3,212                     | 16,899  | 1,140                                | 105                             | 1,547                  | 578                             | 401                           | 1,183                           | 103                             | 2,254                           | 21                    | 12,780                          |
| 5 to 24   |                             | 1,969                     | 653   | 606                                  | 68                              | 1,284                  | 463                             | 79                            | 122                             | 0                               | 0                               | 0                     | 0                               |
| 25 to 49  |                             | 268                       | 201   | 168                                  | 11                              | 27                     | 18                              | 73                            | 173                             | 0                               | 0                               | 0                     | 0                               |
| 50 to 99  |                             | 306                       | 548   | 52                                   | 5                               | 130                    | 51                              | 117                           | 371                             | 7                               | 122                             | 0                     | 0                               |
| 100 to 249  |                             | 333                       | 903   | 144                                  | 10                              | 72                     | 30                              | 76                            | 327                             | 41                              | 537                             | 0                     | 0                               |
| 250 to 499  |                             | 99                        | 560   | 51                                   | 2                               | 13                     | 6                               | 18                            | 73                              | 17                              | 479                             | 0                     | 0                               |
| 500 to 999  |                             | 128                       | 627   | 104                                  | (D)                             | 2                      | 1                               | 8                             | 35                              | 12                              | 461                             | 1                     | (D)                             |
| 1,000 to 4,999  |                             | 41                        | 608   | 8                                    | 1                               | 11                     | (D)                             | 12                            | 25                              | 8                               | 170                             | 2                     | (D)                             |
| 5,000 to 9,999  |                             | 22                        | 1,651   | 5                                    | 1                               | 4                      | 2                               | 6                             | 21                              | 4                               | 125                             | 3                     | 1,502                           |
| 10,000 to 24,999  |                             | 15                        | 904   | 2                                    | (D)                             | 1                      | (D)                             | 3                             | 11                              | 6                               | 128                             | 3                     | 765                             |
| 25,000 or more  |                             | 31                        | 10,243  | 0                                    | 0                               | 3                      | 1                               | 8                             | 24                              | 8                               | 232                             | 12                    | 9,986                           |

<sup>1</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.  
(S) = Indicates imputation of more than 50 percent.  
(-) = Indicates data not collected.

NOTE: Starting in 1999, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. Statistics for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

**Table A-16. Federal funds for industrial R&D performance in the U.S., by selected Federal agency and selected industry: 1999-2001**

| Industry and Federal agency                      | NAICS codes         | 1999 <sup>1</sup>        | 2000       | 2001 <sup>2</sup> |
|--|---------------------|--------------------------|------------|-------------------|
|  |                     | [In millions of dollars] |            |                   |
| All agencies                                     |                     | 22,535                   | 19,118     | 16,899            |
| Chemicals  | 325                 | 194                      | 150        | 180               |
| Machinery  | 333                 | 399 (S)                  | 41         | 67                |
| Computer and electronic products                 | 334                 | 5,993                    | 5,544      | 5,848             |
| Electrical equipment, appliances, and components | 335                 | (D)                      | (D)        | 301 (S)           |
| Motor vehicles, trailers, and parts              | 3361-63             | (D)                      | (D)        | (D)               |
| Other transportation equipment                   | 336 minus (3361-64) | 716                      | (D)        | (D)               |
| Aerospace products and parts                     | 3364                | 9,117                    | 6,424      | 3,785             |
| Other industries <sup>3</sup>                    | --                  | 5,686                    | 5,992      | 5,543             |
| DoD  |                     |                          |            |                   |
| Total  |                     | 11,650 (S)               | 11,142 (S) | 9,959             |
| Chemicals  | 325                 | 81 (S)                   | (D)        | 36 (S)            |
| Machinery  | 333                 | (D)                      | 1 (S)      | 5                 |
| Computer and electronic products                 | 334                 | 5,481 (S)                | 5,108      | 5,280             |
| Electrical equipment, appliances, and components | 335                 | (D)                      | (D)        | (D)               |
| Motor vehicles, trailers, and parts              | 3361-63             | (D)                      | (D)        | (D)               |
| Other transportation equipment                   | 336 minus (3361-64) | (D)                      | (D)        | (D)               |
| Aerospace products and parts                     | 3364                | 4,076                    | 2,733 (S)  | 2,042 (S)         |
| Other industries <sup>3</sup>                    | --                  | 1,322 (S)                | 2,435      | 1,862             |
| NASA   |                     |                          |            |                   |
| Total  |                     | 1,469 (S)                | 1,328 (S)  | 1,071             |
| Chemicals  | 325                 | (D)                      | 0          | 0                 |
| Machinery  | 333                 | (D)                      | 0 (S)      | (D)               |
| Computer and electronic products                 | 334                 | 267 (S)                  | (D)        | 272               |
| Electrical equipment, appliances, and components | 335                 | (D)                      | (D)        | (D)               |
| Motor vehicles, trailers, and parts              | 3361-63             | (D)                      | (D)        | (D)               |
| Other transportation equipment                   | 336 minus (3361-64) | (D)                      | (D)        | 0                 |
| Aerospace products and parts                     | 3364                | 566                      | 314        | 274 (S)           |
| Other industries <sup>3</sup>                    | --                  | 457 (S)                  | 554        | 447               |
| DOE  |                     |                          |            |                   |
| Total  |                     | 2,209                    | 1,455      | 1,253             |
| Chemicals  | 325                 | (D)                      | 19 (S)     | 17 (S)            |
| Machinery  | 333                 | (D)                      | 28 (S)     | (D)               |
| Computer and electronic products                 | 334                 | (D)                      | 0          | 5                 |
| Electrical equipment, appliances, and components | 335                 | (D)                      | (D)        | 34                |
| Motor vehicles, trailers, and parts              | 3361-63             | (D)                      | (D)        | (D)               |
| Other transportation equipment                   | 336 minus (3361-64) | 0                        | 0          | 0                 |
| Aerospace products and parts                     | 3364                | 1,778                    | 1,234      | 191 (S)           |
| Other industries <sup>3</sup>                    | --                  | 255 (S)                  | 159        | 968               |

<sup>1</sup> Some statistics for 1999 have been revised since originally published.

<sup>2</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

<sup>3</sup> For 1999 and 2000, estimates for all manufacturing companies with at least 5 but with fewer than 50 employees and nonmanufacturing companies with at least 5 but with fewer than 15 employees are combined with those for companies in "Other industries" without regard to industry classification.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.  
(S) = Indicates imputation of more than 50 percent.  
(-) = All NAICS codes other than those specified

NOTES: Data for DoD, NASA, and DOE do not sum to the totals because the data reported by other Federal agencies are included in the totals but are not shown separately. In addition, Federal R&D data collected on the Form RD-1A are not allocated by agency type.

During data collection, if exact figures were not available, respondents were asked to estimate or apportion R&D costs according to the number of scientists and engineers working on Federal projects and/or the costs of Federal programs. Consequently, statistics in this table may be based on such estimates.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-17. Domestic net sales of companies that performed industrial R&amp;D in the U.S., by industry, by size of company: 2001

| Industry  | NAICS codes                     | Total <sup>1</sup>       | Size of company [number of employees] |             |             |               |               |               |                   |                   |                     |                   |
|---|---------------------------------|--------------------------|---------------------------------------|-------------|-------------|---------------|---------------|---------------|-------------------|-------------------|---------------------|-------------------|
|   |                                 |                          | 5 to<br>24                            | 25 to<br>49 | 50 to<br>99 | 100 to<br>249 | 250 to<br>499 | 500 to<br>999 | 1,000 to<br>4,999 | 5,000 to<br>9,999 | 10,000 to<br>24,999 | 25,000<br>or more |
| Distribution by industry:   |                                 | [In millions of dollars] |                                       |             |             |               |               |               |                   |                   |                     |                   |
|   |                                 |                          |                                       |             |             |               |               |               |                   |                   |                     |                   |
| All industries  | 21-23, 31-33, 42, 44-81         | 4,835,140                | 32,242                                | 33,507      | 73,288      | 111,392       | 101,466       | 175,292       | 627,725           | 635,660           | 753,055             | 2,291,513         |
| Manufacturing   | 31-33                           | 3,012,938                | 18,007                                | 18,022      | 44,724      | 63,830        | 70,844        | 121,683       | 434,659           | 436,623           | 419,337             | 1,385,209         |
| Food  | 311                             | 384,846                  | 1,269                                 | 1,418       | 1,890       | 3,454         | 16,672        | 21,041        | 65,841            | 23,620            | 67,715              | 181,926           |
| Beverage and tobacco products                                       | 312                             | 37,026                   | 0                                     | 0           | 0           | 0             | (D)           | 0             | 6,033             | 15,744            | (D)                 | 0                 |
| Textiles, apparel, and leather                                      | 313-16                          | 30,929                   | 1,977                                 | (D)         | 301         | 130           | 2,136         | 1,406         | 12,871            | (D)               | 9,615               | 0                 |
| Wood products   | 321                             | 17,041                   | 56                                    | 0           | 463         | 227           | (D)           | (D)           | 3,617             | 5,507             | 6,750               | 0                 |
| Paper, printing and support activities                              | 322, 323                        | 125,696                  | 200                                   | (D)         | 2,632       | 457           | 1,376         | (D)           | 4,900             | 7,269             | 20,380              | 87,705            |
| Petroleum and coal products   | 324                             | 311,244                  | 0                                     | 0           | 0           | 0             | 998           | 244           | 4                 | 106,799           | 11,455              | 191,745           |
| Chemicals   | 325                             | 368,728                  | 2,843                                 | 2,415       | 9,658       | 4,079         | 8,545         | 17,920        | 85,650            | 85,643            | 70,966              | 81,009            |
| Basic chemicals   | 3251                            | 83,452                   | 1,060                                 | 1,077       | 1,783       | 1,868         | (D)           | 4,428         | 30,785            | 31,937            | (D)                 | 0                 |
| Resin, synthetic rubber, fibers,<br>and filament                    | 3252                            | 60,396                   | 0                                     | 0           | 4,236       | (D)           | (D)           | 7,732         | 8,376             | 7,303             | (D)                 | (D)               |
| Pharmaceuticals and medicines                                       | 3254                            | 130,287                  | 50                                    | 806         | 1,035       | (D)           | (D)           | 2,263         | 17,233            | 13,032            | 37,615              | 58,175            |
| Other chemicals   | 325 minus (3251-52,<br>3254)    | 94,593                   | 1,734                                 | 532         | 2,603       | 2,189         | 7,018         | 3,497         | 29,256            | 33,371            | (D)                 | (D)               |
| Plastics and rubber products  | 326                             | 78,730                   | 250                                   | (D)         | 3,242       | 3,054         | 7,150         | 6,916         | 26,027            | 10,980            | 7,232               | (D)               |
| Nonmetallic mineral products  | 327                             | 41,766                   | 1,024                                 | 63          | 27          | 3,365         | 2,260         | 1,243         | 9,520             | 6,841             | 16,494              | 930               |
| Primary metals  | 331                             | 72,413                   | 807                                   | (D)         | 289         | 1,690         | 2,261         | 3,222         | 17,172            | 13,499            | 10,365              | (D)               |
| Fabricated metal products   | 332                             | 94,141                   | 2,373                                 | 0           | 2,327       | 8,267         | 3,638         | 6,540         | 18,928            | 19,831            | 14,438              | 17,799            |
| Machinery   | 333                             | 150,306                  | 1,575                                 | 1,777       | 6,044       | 9,200         | 9,259         | 10,069        | 38,610            | 20,567            | 22,728              | 30,478            |
| Computer and electronic products                                    | 334                             | 379,342                  | 3,192                                 | (D)         | 10,744      | 16,597        | 5,360         | 25,049        | 65,895            | (D)               | 61,807              | 138,161           |
| Computers and peripheral equipment                                  | 3341                            | 41,383                   | 342                                   | (D)         | 871         | 1,341         | 984           | 2,435         | (D)               | (D)               | (D)                 | 0                 |
| Communications equipment  | 3342                            | 91,381                   | 852                                   | 0           | 1,398       | 3,006         | 1,749         | 13,287        | 12,649            | 18,377            | (D)                 | (D)               |
| Semiconductor and other electronic<br>components                    | 3344                            | 135,597                  | 0                                     | 4,596       | 1,722       | 3,572         | 1,044         | 4,186         | 37,423            | 10,630            | 22,008              | 50,416            |
| Navigational, measuring, electromedical,<br>and control instruments | 3345                            | 102,942                  | 1,998                                 | 1,443       | 6,552       | 4,522         | 1,048         | 3,844         | 12,175            | (D)               | 13,361              | (D)               |
| Other computer and electronic products                              | 334 minus (3341-42,<br>3344-45) | 8,038                    | 0                                     | 0           | 200         | 4,157         | 535           | 1,298         | (D)               | (D)               | 0                   | 0                 |

See explanatory information and SOURCE at end of table.

Table A-17. Domestic net sales of companies that performed industrial R&amp;D in the U.S., by industry, by size of company: 2001

| Industry  | NAICS codes                                  | Total <sup>1</sup>       | Size of company [number of employees] |             |             |               |               |               |                   |                   |                     |                   |
|---|--|--------------------------|---------------------------------------|-------------|-------------|---------------|---------------|---------------|-------------------|-------------------|---------------------|-------------------|
|   |  |                          | 5 to<br>24                            | 25 to<br>49 | 50 to<br>99 | 100 to<br>249 | 250 to<br>499 | 500 to<br>999 | 1,000 to<br>4,999 | 5,000 to<br>9,999 | 10,000 to<br>24,999 | 25,000<br>or more |
| Distribution by industry:                           |  | [In millions of dollars] |                                       |             |             |               |               |               |                   |                   |                     |                   |
|   |  |                          |                                       |             |             |               |               |               |                   |                   |                     |                   |
| Electrical equipment, appliances,<br>and components | 335  | 162,732 (S)              | 219                                   | (D)         | 1,943       | 4,842         | 1,279         | 10,129        | 14,943            | 13,746            | 31,587              | (D)               |
| Transportation equipment                            | 336  | 625,167                  | 205                                   | 0           | 2,002       | 1,080         | 4,745         | 10,739        | 24,193            | (D)               | (D)                 | (D)               |
| Motor vehicles, trailers, and parts                 | 3361-63                                      | 455,455                  | 125                                   | 0           | 1,686       | 0             | 2,661         | 9,838         | 18,293            | 32,924            | 17,247              | 372,682           |
| Aerospace products and parts                        | 3364   | 137,052                  | 0                                     | 0           | 316         | 1,080         | 0             | (D)           | 1,297             | 6,599             | (D)                 | 121,629           |
| Other transportation equipment                      | 336 minus (3361-64)                          | 32,659                   | 80                                    | 0           | 0           | 0             | 2,084         | (D)           | 4,603             | (D)               | 9,966 (S)           | (D)               |
| Furniture and related products                      | 337  | 32,825                   | 0                                     | 0           | 400         | 994           | 1,760         | 2,584         | 6,767             | 5,551             | (D)                 | (D)               |
| Miscellaneous manufacturing                         | 339  | 100,006                  | 2,017                                 | 1,858       | 2,763       | 6,394         | 2,931         | 4,234         | 33,689            | (D)               | 10,625              | (D)               |
| Medical equipment and supplies                      | 3391   | 65,846                   | 997                                   | 1,067       | 927         | 1,358         | 1,304         | 1,591         | 20,618            | (D)               | (D)                 | (D)               |
| Other miscellaneous manufacturing                   | 339 minus (3391)                             | 34,160                   | 1,020                                 | 791         | 1,835       | 5,036         | 1,627         | 2,644         | 13,071            | (D)               | (D)                 | (D)               |
| Other manufacturing                                 | 31-33 minus (311-16,<br>321-27, 331-37, 339) | --                       | --                                    | --          | --          | --            | --            | --            | --                | --                | --                  | --                |
| Nonmanufacturing                                    | 21-23, 42, 44-81                             | 1,822,202                | 14,235                                | 15,485      | 28,564      | 47,562        | 30,623        | 53,609        | 193,066           | 199,037           | 333,718             | 906,304           |
| Mining, extraction, and support activities          | 21   | 64,140                   | 0                                     | 107         | (D)         | 0             | (D)           | 1,628         | 3,479             | 19,024            | (D)                 | (D)               |
| Utilities   | 22   | 274,151                  | 0                                     | 0           | 0           | 47            | (D)           | (D)           | 30,992            | 74,698            | 96,171              | (D)               |
| Construction  | 23   | 22,822                   | 246                                   | 388         | 0           | 6,593         | 1,650         | (D)           | 1,992             | (D)               | 10,641              | 0                 |
| Trade   | 42, 44, 45                                   | 393,367                  | 5,884                                 | 4,508       | 16,499      | 20,262        | 1,815         | 4,643         | 46,576            | 49,899            | 71,234              | 172,047           |
| Transportation and warehousing                      | 48, 49                                       | 72,515                   | 1,455                                 | 227         | (D)         | 0             | 0             | (D)           | 4,842             | 0                 | (D)                 | 63,239            |
| Information   | 51   | 388,770                  | 1,145                                 | 2,328       | 2,357       | 5,687         | (D)           | 11,656        | 41,108            | (D)               | 49,629              | 266,180           |
| Publishing  | 511  | 91,172                   | 820                                   | 714         | 1,687       | 4,424         | (D)           | 5,334         | 26,650            | (D)               | 17,004              | (D)               |
| Newspaper, periodical, book,<br>and database        | 5111   | 23,620                   | 87                                    | 250         | 110         | 0             | (D)           | 0             | 5,489             | 0                 | (D)                 | (D)               |
| Software  | 5112   | 67,552                   | 732                                   | 464         | 1,577       | 4,424         | 4,471         | 5,334         | 21,161            | (D)               | (D)                 | (D)               |
| Broadcasting and telecommunications                 | 513  | 249,287                  | 325                                   | 0           | 0           | 0             | (D)           | 5,374         | 11,078            | 0                 | (D)                 | 225,284           |
| Radio and television broadcasting                   | 5131   | (D)                      | 0                                     | 0           | 0           | 0             | 0             | 0             | 9,402             | 0                 | (D)                 | 0                 |
| Telecommunications                                  | 5133   | 234,848                  | 325                                   | 0           | 0           | 0             | (D)           | 5,374         | (D)               | 0                 | (D)                 | 225,284           |
| Other broadcasting and<br>telecommunications        | 513 minus (5131, 5133)                       | (D)                      | 0                                     | 0           | 0           | 0             | (D)           | 0             | (D)               | 0                 | (D)                 | 0                 |

See explanatory information and SOURCE at end of table.

Table A-17. Domestic net sales of companies that performed industrial R&amp;D in the U.S., by industry, by size of company: 2001

| Industry                  | NAICS codes  | Total <sup>1</sup>          | Size of company [number of employees] |          |          |            |            |            |                |                |                  |                |         |
|---------------------------|--|-----------------------------|---------------------------------------|----------|----------|------------|------------|------------|----------------|----------------|------------------|----------------|---------|
|                           |  |                             | 5 to 24                               | 25 to 49 | 50 to 99 | 100 to 249 | 250 to 499 | 500 to 999 | 1,000 to 4,999 | 5,000 to 9,999 | 10,000 to 24,999 | 25,000 or more |         |
| Distribution by industry: |  | [In millions of dollars]    |                                       |          |          |            |            |            |                |                |                  |                |         |
|                           | Other information                                      | 51 minus (511, 513)         | 48,311                                | 0        | 1,614    | 671        | 1,263      | 1,808      | 948            | 3,380          | (D)              | (D)            | (D)     |
|                           | Finance, insurance, and real estate                    | 52, 53                      | 323,250                               | 184      | 0        | 0          | 161        | 5,964      | 2,977          | 26,653         | 16,929           | 44,711         | 225,671 |
|                           | Professional, scientific, and technical services       | 54                          | 165,299                               | 3,765    | 6,793    | 7,189      | 12,408     | 9,221      | 12,257         | 23,994         | 21,907           | 10,531 (S)     | 57,233  |
|                           | Architectural, engineering, and related services       | 5413                        | 45,221                                | 397      | 2,426    | 1,962      | 1,551      | 2,928      | 1,344          | 7,725          | 7,900            | (D)            | (D)     |
|                           | Computer systems design and related services           | 5415                        | 52,466                                | 1,503    | 1,943    | 3,138      | 5,141      | 3,163      | 7,926          | 9,700          | 4,910            | (D)            | (D)     |
|                           | Scientific R&D services                                | 5417                        | 29,858                                | (D)      | 1,530    | 1,303      | 3,696      | 2,723      | 2,677          | 4,524          | 5,378            | 0              | (D)     |
|                           | Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417) | 37,753                                | (D)      | 894      | 785        | 2,019      | 407        | 310            | 2,046          | 3,720            | (D)            | 26,248  |
|                           | Management of companies and enterprises                | 55                          | 4,862                                 | 561      | (D)      | 981        | (D)        | 0          | 1,278 (S)      | 1,955          | 0                | 0              | 0       |
|                           | Health care services                                   | 621-23                      | 27,200                                | 563      | (D)      | 1,322      | (D)        | 644        | 2,755          | 3,481          | (D)              | 3,116          | (D)     |
|                           | Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81     | 85,826                                | 433      | 1,004    | 203        | 1,474      | 4,329      | 14,986         | 7,994          | 7,374            | 13,491         | 34,537  |

<sup>1</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

(-) = Indicates data not collected.

NOTE: For 1999, 2000, and 2001, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. Statistics for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

**Table A-18. Concentration of total, Federal, and company and other industrial R&D funds and net sales of companies that performed industrial R&D in the U.S., ranked by size of R&D program: 1991-2001**

| Companies ranked by<br>size of R&D program                            | 1991 | 1992 <sup>1</sup> | 1993 <sup>1</sup> | 1994 <sup>1</sup> | 1995 <sup>1</sup> | 1996 <sup>1</sup> | 1997 <sup>1</sup> | 1998 <sup>1</sup> | 1999 <sup>1,2</sup> | 2000 <sup>1</sup> | 2001 <sup>1</sup> |
|---|------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|---------------------|-------------------|-------------------|
| Percent of total (company, Federal, and other) R&D funds <sup>3</sup> |      |                   |                   |                   |                   |                   |                   |                   |                     |                   |                   |
| First 4 (1-4)   | 16   | 15                | 17                | 15                | 16                | 15                | 14                | 12                | 11                  | 10                | 10                |
| Next 4 (5-8)  | 8    | 8                 | 7                 | 8                 | 8                 | 8                 | 8                 | 8                 | 8                   | 7                 | 7                 |
| Next 12 (9-20)  | 12   | 13                | 13                | 14                | 13                | 13                | 13                | 13                | 13                  | 13                | 12                |
| Next 20 (21-40)   | 11   | 11                | 12                | 13                | 12                | 12                | 11                | 11                | 11                  | 11                | 11                |
| Next 60 (41-100)  | 15   | 15                | 16                | 15                | 14                | 14                | 14                | 13                | 13                  | 14                | 14                |
| Next 100 (101-200)  | 12   | 12                | 8                 | 9                 | 8                 | 9                 | 9                 | 9                 | 9                   | 9                 | 10                |
| Next 200 (201-400)  | 6    | 6                 | 7                 | 7                 | 7                 | 7                 | 8                 | 8                 | 7                   | 10                | 8                 |
| Percent of Federal R&D funds <sup>3</sup>                             |      |                   |                   |                   |                   |                   |                   |                   |                     |                   |                   |
| First 4 (1-4)   | 14   | 11                | 23                | 26                | 35                | 37                | 40                | 46                | 47                  | 43                | 41                |
| Next 4 (5-8)  | 21   | 18                | 17                | 19                | 19                | 20                | 23                | 17                | 14                  | 16 (S)            | 17                |
| Next 12 (9-20)  | 21   | 27                | 32                | 32                | 27                | 23                | 18                | 14                | 15                  | 15                | 17                |
| Next 20 (21-40)   | 15   | 13                | 16                | 13                | 8                 | 7                 | 7                 | 7                 | 8                   | 7                 | 6                 |
| Next 60 (41-100)  | 13   | 11                | 5                 | 7                 | 5                 | 5                 | 5                 | 7                 | 7                   | 6                 | 8                 |
| Next 100 (101-200)  | 3    | 4                 | 5                 | 2                 | 3                 | 4                 | 3                 | 5                 | 4                   | 5                 | 5                 |
| Next 200 (201-400)  | 2    | 2                 | 2                 | 1                 | 3                 | 4                 | 4                 | 4                 | 5                   | 7                 | 6                 |
| Percent of company and other (except Federal) R&D funds               |      |                   |                   |                   |                   |                   |                   |                   |                     |                   |                   |
| First 4 (1-4)   | 17   | 17                | 17                | 16                | 16                | 15                | 13                | 12                | 11                  | 10                | 11                |
| Next 4 (5-8)  | 7    | 8                 | 7                 | 7                 | 7                 | 7                 | 7                 | 7                 | 8                   | 7                 | 8                 |
| Next 12 (9-20)  | 10   | 12                | 12                | 12                | 11                | 11                | 11                | 12                | 12                  | 12                | 11                |
| Next 20 (21-40)   | 10   | 11                | 11                | 11                | 11                | 10                | 11                | 10                | 10                  | 10                | 10                |
| Next 60 (41-100)  | 16   | 17                | 14                | 14                | 14                | 14                | 13                | 13                | 13                  | 13                | 14                |
| Next 100 (101-200)  | 15   | 14                | 9                 | 9                 | 9                 | 10                | 10                | 10                | 9                   | 9                 | 10                |
| Next 200 (201-400)  | 7    | 7                 | 8                 | 8                 | 8                 | 8                 | 9                 | 8                 | 8                   | 11                | 8                 |
| Percent of net sales  |      |                   |                   |                   |                   |                   |                   |                   |                     |                   |                   |
| First 4 (1-4)   | 7    | 8                 | 8                 | 8                 | 8                 | 6                 | 6                 | 5                 | 6 (S)               | 3                 | 3                 |
| Next 4 (5-8)  | 3    | 3                 | 3                 | 2                 | 2                 | 3                 | 2                 | 3                 | 2                   | (D)               | 4                 |
| Next 12 (9-20)  | 4    | 4                 | 4                 | 5                 | 6                 | 6                 | 5                 | 5                 | 7                   | 8                 | 8                 |
| Next 20 (21-40)   | 4    | 4                 | 4                 | 5                 | 4                 | 4                 | 5                 | 5                 | 4                   | 4                 | 5                 |
| Next 60 (41-100)  | 12   | 12                | 11                | 10                | 9                 | 8                 | 7                 | 8                 | 9                   | 11                | 9                 |
| Next 100 (101-200)  | 9    | 9                 | 8                 | 8                 | 8                 | 11                | 8                 | 8                 | 8                   | 9                 | 11                |
| Next 200 (201-400)  | 11   | 11                | 10                | 10                | 10                | 11                | 13                | 11                | 14                  | 12                | 10                |

<sup>1</sup> As a result of annual sampling, implemented to produce statistics that better reflect R&D performance among firms in nonmanufacturing industries and small firms in all industries, statistics for 1992 and later years are not directly comparable with statistics for earlier years. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

<sup>2</sup> Some percentages for 1999 have been revised since originally published.

<sup>3</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NOTE: Companies were ranked individually for each year; therefore, particular companies comprising the size groups may have changed from year to year.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001



Table A-19. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company: 1999-2001

Page 1 of 3

17772001

Page 1 of 3

| Industry and size of company                                     | NAICS codes                               | 1999 <sup>1</sup> | 2000 | 2001 <sup>2</sup> |
|--|---|-------------------|------|-------------------|
|  |   | Percent           |      |                   |
| Distribution by industry:  |   |                   |      |                   |
| All industries   | 21-23, 31-33, 42, 44-81                   | 3.7               | 3.8  | 4.1               |
| Manufacturing  | 31-33                                     | 3.7               | 3.6  | 4.0               |
| Food   | 311                                       | 0.4               | (D)  | 0.5               |
| Beverage and tobacco products                                    | 312                                       | (D)               | 0.7  | 0.4               |
| Textiles, apparel, and leather                                   | 313-16                                    | 0.7               | (D)  | (D)               |
| Wood products  | 321                                       | 0.5               | 0.8  | 1.1               |
| Paper, printing and support activities                           | 322, 323                                  | (D)               | (D)  | (D)               |
| Petroleum and coal products                                      | 324                                       | 0.4               | (D)  | (D)               |
| Chemicals  | 325                                       | 5.2               | 5.9  | 4.9               |
| Basic chemicals  | 3251                                      | 2.1               | 2.4  | 2.2               |
| Resin, synthetic rubber, fibers, and filament                    | 3252                                      | (D)               | 5.6  | (D)               |
| Pharmaceuticals and medicines                                    | 3254                                      | (D)               | (D)  | 7.8               |
| Other chemicals  | 325 minus (3251-52, 3254)                 | (D)               | (D)  | (D)               |
| Plastics and rubber products                                     | 326                                       | 1.9               | (D)  | (D)               |
| Nonmetallic mineral products                                     | 327                                       | (D)               | 1.8  | 2.4               |
| Primary metals   | 331                                       | 0.4               | 0.5  | 0.7               |
| Fabricated metal products  | 332                                       | 1.5               | 1.4  | 1.7               |
| Machinery  | 333                                       | 3.5               | 3.9  | 4.3               |
| Computer and electronic products                                 | 334                                       | 10.3              | 9.0  | 12.4              |
| Computers and peripheral equipment                               | 3341                                      | (D)               | 6.5  | (D)               |
| Communications equipment   | 3342                                      | 12.0              | 9.9  | 17.0              |
| Semiconductor and other electronic components                    | 3344                                      | 8.3               | 7.5  | 10.6              |
| Navigational, measuring, electromedical, and control instruments | 3345                                      | 15.2              | 12.0 | 12.6              |
| Other computer and electronic products                           | 334 minus (3341-42, 3344-45)              | (D)               | 4.3  | (D)               |
| Electrical equipment, appliances, and components                 | 335                                       | (D)               | (D)  | 3.1 (S)           |
| Transportation equipment   | 336                                       | 4.2               | 4.0  | 4.2               |
| Motor vehicles, trailers, and parts                              | 3361-63                                   | (D)               | (D)  | (D)               |
| Aerospace products and parts                                     | 3364                                      | 8.8               | 7.3  | 5.7               |
| Other transportation equipment                                   | 336 minus (3361-64)                       | (D)               | (D)  | (D)               |
| Furniture and related products                                   | 337                                       | 0.7               | 0.8  | 0.9               |
| Miscellaneous manufacturing                                      | 339                                       | 5.7               | 8.7  | 6.6               |
| Medical equipment and supplies                                   | 3391                                      | (D)               | (D)  | (D)               |
| Other miscellaneous manufacturing                                | 339 minus (3391)                          | (D)               | (D)  | (D)               |
| Other manufacturing  | 31-33 minus (311-16, 321-27, 331-37, 339) | --                | --   | --                |

See explanatory information and SOURCE at end of table.

Table A-19. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company: 1999-2001

Page 2 of 3

| Industry and size of company                           | NAICS codes                 | 1999 <sup>1</sup> | 2000    | 2001 <sup>2</sup> |
|--|-----------------------------|-------------------|---------|-------------------|
|  |                             | Percent           |         |                   |
| Distribution by industry:                              |                             |                   |         |                   |
| Nonmanufacturing                                       | 21-23, 42, 44-81            | 3.7               | 4.1     | 4.3               |
| Mining, extraction, and support activities             | 21                          | (D)               | 1.0     | (D)               |
| Utilities  | 22                          | 0.1               | (D)     | 0.0               |
| Construction   | 23                          | 3.1               | (D)     | 1.4               |
| Trade  | 42, 44, 45                  | 5.5               | 5.3     | 6.2               |
| Transportation and warehousing                         | 48, 49                      | 0.5               | (D)     | 2.5               |
| Information  | 51                          | 3.6               | 4.1     | (D)               |
| Publishing   | 511                         | 13.4              | 16.3    | 15.1              |
| Newspaper, periodical, book, and database              | 5111                        | 2.0               | 2.0     | 2.7               |
| Software   | 5112                        | 16.8              | 20.5    | 19.4              |
| Broadcasting and telecommunications                    | 513                         | (D)               | 0.5 (S) | (D)               |
| Radio and television broadcasting                      | 5131                        | (D)               | (D)     | (D)               |
| Telecommunications                                     | 5133                        | (D)               | (D)     | (D)               |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)      | (D)               | (D)     | (D)               |
| Other information                                      | 51 minus (511, 513)         | (D)               | 5.1     | (D)               |
| Finance, insurance, and real estate                    | 52, 53                      | (D)               | 1.2     | (D)               |
| Professional, scientific, and technical services       | 54                          | 15.3              | 18.7    | 16.8              |
| Architectural, engineering, and related services       | 5413                        | 10.1              | 10.8    | 7.5               |
| Computer systems design and related services           | 5415                        | (D)               | 12.3    | 17.4              |
| Scientific R&D services                                | 5417                        | 45.3              | 42.9    | 47.7              |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417) | (D)               | 6.6     | 2.4               |
| Management of companies and enterprises                | 55                          | (D)               | 4.4     | 7.8               |
| Health care services                                   | 621-23                      | 6.5               | 3.2     | 4.2               |
| Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81     | (D)               | 1.0     | 1.5               |

See explanatory information and SOURCE at end of table.

Table A-19. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company: 1999-2001

Page 3 of 3

1999-2001

Page 3 of 4

| Industry and size of company                              |  | 1999 <sup>1</sup> | 2000 | 2001 <sup>2</sup> |
|---|--|-------------------|------|-------------------|
|   |  | Percent           |      |                   |
| Distribution by size of company:<br>[Number of employees] |  |                   |      |                   |
| Total   |  | 3.7               | 3.8  | 4.1               |
| 5 to 24   |  | 18.2              | 19.9 | 15.0              |
| 25 to 49  |  | 11.5              | 14.0 | 11.2              |
| 50 to 99  |  | 14.2              | 12.1 | 11.2              |
| 100 to 249  |  | 7.6               | 8.7  | 11.6              |
| 250 to 499  |  | 6.3               | 6.7  | 8.6               |
| 500 to 999  |  | 4.4               | 5.0  | 6.0               |
| 1,000 to 4,999  |  | 3.2               | 3.6  | 4.3               |
| 5,000 to 9,999  |  | 2.6               | 2.4  | 2.8               |
| 10,000 to 24,999  |  | 2.8               | 3.2  | 3.6               |
| 25,000 or more  |  | 3.6               | 3.4  | 3.4               |

<sup>1</sup> Some percentages for 1999 have been revised since originally published.

<sup>2</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.  
(-) = Indicates data not collected.

NOTES: For 1999, 2000, and 2001, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. For 1999 and 2000, statistics previously published for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-20. Company and other non-Federal funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company: 1999-2001

Page 1 of 3

| Industry and size of company                                     | NAICS codes                               | 1999 <sup>1</sup> | 2000 | 2001    |
|--|---|-------------------|------|---------|
|  |   | Percent           |      |         |
| Distribution by industry:  |   |                   |      |         |
| All industries   | 21-23, 31-33, 42, 44-81                   | 3.3               | 3.4  | 3.8     |
| Manufacturing  | 31-33                                     | 3.2               | 3.3  | 3.6     |
| Food   | 311                                       | 0.4               | 0.4  | 0.5     |
| Beverage and tobacco products                                    | 312                                       | (D)               | 0.7  | 0.4     |
| Textiles, apparel, and leather                                   | 313-16                                    | 0.7               | 0.8  | 0.8     |
| Wood products  | 321                                       | 0.5               | 0.8  | 1.1     |
| Paper, printing and support activities                           | 322, 323                                  | 1.4               | 1.6  | 2.1     |
| Petroleum and coal products                                      | 324                                       | (D)               | 0.3  | 0.3     |
| Chemicals  | 325                                       | 5.1               | 5.9  | 4.8     |
| Basic chemicals  | 3251                                      | 2.0               | 2.3  | 2.2     |
| Resin, synthetic rubber, fibers, and filament                    | 3252                                      | 4.2               | 5.6  | 4.5     |
| Pharmaceuticals and medicines                                    | 3254                                      | 10.5              | 9.8  | 7.8     |
| Other chemicals  | 325 minus (3251-52, 3254)                 | 3.2               | 3.6  | 3.2     |
| Plastics and rubber products                                     | 326                                       | 1.9               | 1.8  | 2.9     |
| Nonmetallic mineral products                                     | 327                                       | 1.5               | 1.8  | 2.3     |
| Primary metals   | 331                                       | 0.4               | 0.5  | 0.7     |
| Fabricated metal products  | 332                                       | 1.4               | 1.4  | 1.6     |
| Machinery  | 333                                       | 3.3               | 3.8  | 4.2     |
| Computer and electronic products                                 | 334                                       | 8.5               | 7.9  | 10.9    |
| Computers and peripheral equipment                               | 3341                                      | 6.4               | 6.5  | 7.6     |
| Communications equipment   | 3342                                      | 11.6              | 9.6  | 16.6    |
| Semiconductor and other electronic components                    | 3344                                      | 8.3               | 7.4  | 10.5    |
| Navigational, measuring, electromedical, and control instruments | 3345                                      | 9.1               | 8.0  | 7.3     |
| Other computer and electronic products                           | 334 minus (3341-42, 3344-45)              | 5.8               | 4.3  | 13.5    |
| Electrical equipment, appliances, and components                 | 335                                       | 2.3               | 2.1  | 2.9 (S) |
| Transportation equipment   | 336                                       | 2.9               | 3.1  | 3.4     |
| Motor vehicles, trailers, and parts                              | 3361-63                                   | 2.9               | 3.2  | 3.5     |
| Aerospace products and parts                                     | 3364                                      | 3.2               | 2.8  | 3.0     |
| Other transportation equipment                                   | 336 minus (3361-64)                       | 1.6               | 1.8  | 2.5 (S) |
| Furniture and related products                                   | 337                                       | 0.7               | 0.8  | 0.9     |
| Miscellaneous manufacturing                                      | 339                                       | 5.7               | 8.7  | 6.6     |
| Medical equipment and supplies                                   | 3391                                      | 7.7               | 13.1 | 9.0     |
| Other miscellaneous manufacturing                                | 339 minus (3391)                          | 2.3               | 2.3  | 2.0     |
| Other manufacturing  | 31-33 minus (311-16, 321-27, 331-37, 339) | --                | --   | --      |

See explanatory information and SOURCE at end of table.

Table A-20. Company and other non-Federal funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company: 1999-2001

Page 2 of 3

Page 2 of 3

| Industry and size of company                           | NAICS codes                 | 1999 <sup>1</sup> | 2000 | 2001 |
|--|-----------------------------|-------------------|------|------|
|  |                             | Percent           |      |      |
| Distribution by industry:                              |                             |                   |      |      |
| Nonmanufacturing                                       | 21-23, 42, 44-81            | 3.4               | 3.8  | 4.0  |
| Mining, extraction, and support activities             | 21                          | 1.9               | 1.0  | 1.3  |
| Utilities  | 22                          | 0.1               | 0.1  | 0.0  |
| Construction   | 23                          | 3.1               | 1.9  | 1.4  |
| Trade  | 42, 44, 45                  | 5.5               | 5.3  | 6.2  |
| Transportation and warehousing                         | 48, 49                      | 0.5               | 0.3  | 2.4  |
| Information  | 51                          | 3.4               | 4.0  | 4.4  |
| Publishing   | 511                         | 13.4              | 16.3 | 15.0 |
| Newspaper, periodical, book, and database              | 5111                        | 2.0               | 2.0  | 2.7  |
| Software   | 5112                        | 16.7              | 20.4 | 19.3 |
| Broadcasting and telecommunications                    | 513                         | 0.4               | 0.4  | 0.5  |
| Radio and television broadcasting                      | 5131                        | (D)               | (D)  | (D)  |
| Telecommunications                                     | 5133                        | (D)               | (D)  | 0.5  |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)      | (D)               | (D)  | (D)  |
| Other information                                      | 51 minus (511, 513)         | 8.6               | 4.9  | 4.7  |
| Finance, insurance, and real estate                    | 52, 53                      | 0.5               | 1.2  | 0.7  |
| Professional, scientific, and technical services       | 54                          | 11.6              | 14.9 | 13.7 |
| Architectural, engineering, and related services       | 5413                        | 6.8               | 7.1  | 5.2  |
| Computer systems design and related services           | 5415                        | 11.0              | 11.8 | 16.5 |
| Scientific R&D services                                | 5417                        | 32.1              | 32.3 | 36.5 |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417) | 1.9               | 6.1  | 1.9  |
| Management of companies and enterprises                | 55                          | 5.7               | 4.4  | 7.8  |
| Health care services                                   | 621-23                      | 6.4               | 2.8  | 4.1  |
| Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81     | 0.9               | 1.0  | 1.4  |

See explanatory information and SOURCE at end of table.

Table A-20. Company and other non-Federal funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company: 1999-2001

Page 3 of 3

Page 3 of 4

| Industry and size of company                              |  | 1999 <sup>1</sup> | 2000 | 2001 |
|---|--|-------------------|------|------|
|   |  | Percent           |      |      |
| Distribution by size of company:<br>[Number of employees] |  |                   |      |      |
| Total   |  | 3.3               | 3.4  | 3.8  |
| 5 to 24   |  | 16.6              | 17.2 | 12.9 |
| 25 to 49  |  | 10.6              | 13.4 | 10.6 |
| 50 to 99  |  | 13.0              | 11.2 | 10.4 |
| 100 to 249  |  | 6.9               | 8.0  | 10.8 |
| 250 to 499  |  | 5.9               | 6.1  | 8.0  |
| 500 to 999  |  | 4.0               | 4.7  | 5.7  |
| 1,000 to 4,999  |  | 3.1               | 3.5  | 4.2  |
| 5,000 to 9,999  |  | 2.2               | 2.2  | 2.5  |
| 10,000 to 24,999  |  | 2.8               | 3.1  | 3.5  |
| 25,000 or more  |  | 2.8               | 2.9  | 3.0  |

<sup>1</sup> Some percentages for 1999 have been revised since originally published.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.  
(S) = Indicates imputation of more than 50 percent.  
(-) = Indicates data not collected.

NOTES: The R&D in this table is the industrial R&D performed within company facilities funded from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and State governments. Excluded from this table are company-funded R&D not performed within the company (e.g., R&D contracted out to other organizations) and company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations).

For 1999, 2000, and 2001, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. For 1999 and 2000, statistics previously published for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-21. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company, ranked by size of R&D program: 2001

Page 1 of 2

| Industry and size of company  | NAICS codes                  | Total (Federal plus company and other) R&D funds <sup>1</sup> |                     |                      | Total (Federal plus company and other) R&D funds<br>as a percent of net sales |                     |                      |
|---|------------------------------|---|---------------------|----------------------|---|---------------------|----------------------|
|   |                              | First 4<br>companies  | Next 4<br>companies | Next 12<br>companies | First 4<br>companies  | Next 4<br>companies | Next 12<br>companies |
|   |                              | [In millions of dollars]                                      |                     |                      | [Percent]   |                     |                      |
| Distribution by industry:   |                              |   |                     |                      |   |                     |                      |
| All industries  | 21-23, 31-33, 42, 44-81      | 19,639  | 14,866              | 23,932               | 13.9  | 7.2                 | 6.6                  |
| Manufacturing   | 31-33                        | 19,427  | 12,052              | 17,274               | 14.3  | 5.1                 | 5.3                  |
| Food  | 311                          | 771   | 237                 | 322                  | 1.0   | 0.4                 | 0.5                  |
| Beverage and tobacco products                                       | 312                          | 119   | 31                  | 1                    | 0.4   | 0.6                 | 0.1                  |
| Textiles, apparel, and leather                                      | 313-16                       | 59  | 37                  | 55                   | 1.0   | 0.9                 | 1.7                  |
| Wood products   | 321                          | 103   | 11                  | 8                    | 1.4   | 0.3                 | 0.2                  |
| Paper, printing and support activities                              | 322, 323                     | 2,198   | 194                 | 154                  | 3.7   | 0.5                 | 0.7                  |
| Petroleum and coal products   | 324                          | 994   | 51                  | 2                    | 0.5   | (D)                 | 0.0                  |
| Chemicals   | 325                          | 5,318   | 3,926               | 3,510                | 7.9   | 8.3                 | 6.0                  |
| Basic chemicals   | 3251                         | 475   | 283                 | 475                  | 2.2   | 7.6                 | 2.3 (S)              |
| Resin, synthetic rubber, fibers, and filament                       | 3252                         | 2,227   | 204                 | 83                   | 7.4   | 1.7                 | 1.0                  |
| Pharmaceuticals and medicines                                       | 3254                         | 5,294   | 2,577               | 1,449                | 8.1   | 7.6                 | 9.1                  |
| Other chemicals   | 325 minus (3251-52, 3254)    | 1,672   | 352                 | 431                  | 5.4   | 3.2                 | 2.4                  |
| Plastics and rubber products  | 326                          | 622   | 178                 | 211                  | 4.4   | 2.2                 | 2.3                  |
| Nonmetallic mineral products  | 327                          | 216   | 84                  | 91                   | 1.4   | 2.0                 | 1.3                  |
| Primary metals  | 331                          | 251   | 60                  | 79                   | 1.0   | 0.8                 | 0.5                  |
| Fabricated metal products   | 332                          | 719   | 180                 | 200                  | 3.9   | 1.9                 | 0.9                  |
| Machinery   | 333                          | 2,261   | 769                 | 961                  | 9.4   | 5.5                 | 3.8                  |
| Computer and electronic products                                    | 334                          | 16,490  | 4,348               | 6,311                | 21.0  | 9.0                 | 7.9                  |
| Computers and peripheral equipment                                  | 3341                         | 1,797   | 430                 | 378                  | 6.8   | 9.8                 | 6.0                  |
| Communications equipment  | 3342                         | 9,616   | 893                 | 1,129                | 20.9  | 15.1                | 11.0                 |
| Semiconductor and other electronic components                       | 3344                         | 5,876   | 1,840               | 2,676                | 12.9  | 6.2                 | 15.7                 |
| Navigational, measuring, electromedical,<br>and control instruments | 3345                         | 7,470   | 1,816               | 1,330                | 13.4  | 19.1                | 11.9                 |
| Other computer and electronic products                              | 334 minus (3341-42, 3344-45) | 264   | 61                  | 44                   | 13.8  | 8.7                 | 3.4                  |
| Electrical equipment, appliances, and components                    | 335                          | 2,147 (S)   | 329                 | 404                  | 2.2 (S)   | 2.1                 | 2.8                  |
| Transportation equipment  | 336                          | 14,391  | 5,775               | 3,631                | 4.0   | 9.0                 | 4.2                  |
| Motor vehicles, trailers, and parts                                 | 3361-63                      | 13,581  | 1,860 (S)           | 906                  | 4.2   | 6.3                 | 1.7                  |
| Aerospace products and parts  | 3364                         | 6,275   | 1,295               | 287                  | 5.6   | 7.8                 | 4.0                  |
| Other transportation equipment                                      | 336 minus (3361-64)          | 681 (S)   | 116                 | 50                   | 3.5   | 1.7 (S)             | 1.2                  |

See explanatory information and SOURCE at end of table.

Table A-21. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company, ranked by size of R&D program: 2001

| Industry and size of company                           | NAICS codes                               | Total (Federal plus company and other) R&D funds <sup>1</sup> |                  |                   | Total (Federal plus company and other) R&D funds as a percent of net sales |                  |                   |
|--|---|---|------------------|-------------------|--|------------------|-------------------|
|  |   | First 4 companies   | Next 4 companies | Next 12 companies | First 4 companies  | Next 4 companies | Next 12 companies |
|  |   | [In millions of dollars]                                      |                  |                   | [Percent]  |                  |                   |
| Distribution by industry:                              |   |   |                  |                   |  |                  |                   |
| Furniture and related products                         | 337                                       | 131   | 58               | 38                | 1.0 (S)  | 1.0              | 0.8               |
| Miscellaneous manufacturing                            | 339                                       | 3,930   | 649              | 699               | 13.7   | 7.4              | 4.4               |
| Medical equipment and supplies                         | 3391                                      | 3,930   | 626              | 512               | 13.7   | 7.7 (S)          | 6.3               |
| Other miscellaneous manufacturing                      | 339 minus (3391)                          | 321   | 84               | 95                | 3.1  | 2.7              | 2.1               |
| Other manufacturing                                    | 31-33 minus (311-16, 321-27, 331-37, 339) | --  | --               | --                | --   | --               | --                |
| Nonmanufacturing                                       | 21-23, 42, 44-81                          | 14,009  | 5,615            | 9,689             | 13.7   | 15.0             | 14.5              |
| Mining, extraction, and support activities             | 21  | 713   | 84               | 40                | 1.8  | 0.5              | 0.7               |
| Utilities  | 22  | 55  | 28               | 34                | 0.1  | 0.0              | 0.0               |
| Construction   | 23  | 154   | 52               | 15                | 1.4  | 2.5              | 0.2               |
| Trade  | 42, 44, 45                                | 11,220  | 3,944            | 4,716             | 12.1   | 9.5              | 15.4              |
| Transportation and warehousing                         | 48, 49                                    | 377   | 27               | 9                 | 0.8  | 0.2              | 0.1               |
| Information  | 51  | 7,426   | 1,275            | 2,057             | 18.4   | (D)              | 13.0              |
| Publishing   | 511                                       | 6,617   | 856              | 1,679             | 22.2   | 22.3             | 11.1              |
| Newspaper, periodical, book, and database              | 5111                                      | 376   | 55               | 23                | 3.7  | 1.4              | 0.3               |
| Software   | 5112                                      | 6,617   | 856              | 1,600             | 22.2   | 22.3             | 18.2              |
| Broadcasting and telecommunications                    | 513                                       | 834   | 129              | 91                | 0.4  | 0.3              | 1.9               |
| Radio and television broadcasting                      | 5131                                      | 22  | 0                | 0                 | 0.5  | 0.0              | 0.0               |
| Telecommunications                                     | 5133                                      | 834   | 129              | 55                | 0.4  | 0.3              | 10.8              |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)                    | (D)   | 0                | 0                 | (D)  | 0.0              | 0.0               |
| Other information                                      | 51 minus (511, 513)                       | 1,486   | 210              | 204               | 4.1  | 7.6              | 5.8               |
| Finance, insurance, and real estate                    | 52, 53                                    | 760   | 475              | 431               | 1.3  | 0.9              | 0.3               |
| Professional, scientific, and technical services       | 54  | 4,373 (S)   | 1,507            | 2,057             | 22.8 (S)   | 115.7            | 30.4              |
| Architectural, engineering, and related services       | 5413                                      | 1,104   | 379              | 490               | 44.1   | 53.8             | 14.1              |
| Computer systems design and related services           | 5415                                      | 2,109 (S)   | 458              | 804               | 18.8 (S)   | 17.2             | 7.1               |
| Scientific R&D services                                | 5417                                      | 3,248   | 926 (S)          | 1,307             | 28.1 (S)   | 57.9 (S)         | 53.8              |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417)               | 235   | 71               | 56                | (D)  | (D)              | 1.5               |
| Management of companies and enterprises                | 55  | 107   | 11               | 1                 | (D)  | 7.7 (S)          | 0.2               |
| Health care services                                   | 621-23                                    | 284   | 36               | 30                | (D)  | 0.6 (S)          | 0.5               |
| Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81                   | 304   | 97               | 104               | 2.3  | 3.7              | 0.4               |

See explanatory information and SOURCE at end of table.



Table A-21. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company, ranked by size of R&D program: 2001

Page 3 of 4

| Industry and size of company                              |  | Total (Federal plus company and other) R&D funds <sup>1</sup> |                  |                   | Total (Federal plus company and other) R&D funds as a percent of net sales |                  |                   |
|---|--|---|------------------|-------------------|--|------------------|-------------------|
|   |  | First 4 companies   | Next 4 companies | Next 12 companies | First 4 companies  | Next 4 companies | Next 12 companies |
|   |  | [In millions of dollars]                                      |                  |                   | [Percent]  |                  |                   |
| Distribution by size of company:<br>[Number of employees] |  |   |                  |                   |  |                  |                   |
| Total   |  | 19,639  | 14,866           | 23,932            | 13.9   | 7.2              | 6.6               |
| 5 to 24   |  | 28  | 19               | 34                | 103.4  | 97.0             | 2.4               |
| 25 to 49  |  | 146   | 72               | 106               | 69.0   | 157.0            | 145.4             |
| 50 to 99  |  | 173   | 104              | 211               | 58.6   | 148.4            | 171.6             |
| 100 to 249  |  | 327   | 254              | 592               | 101.5  | 13.7 (S)         | 137.3             |
| 250 to 499  |  | 467   | 312              | 721               | 154.9  | 152.5            | 63.9              |
| 500 to 999  |  | 870   | 574              | 1,166             | 110.5  | 56.7             | 36.2              |
| 1,000 to 4,999  |  | 2,139   | 1,590            | 3,064             | 78.2   | 22.6             | 22.3              |
| 5,000 to 9,999  |  | 3,422   | 2,018            | 4,268             | 27.4   | 13.4             | 9.4               |
| 10,000 to 24,999  |  | 7,313   | 4,140            | 7,643             | 17.8   | 13.5             | 7.4               |
| 25,000 or more  |  | 19,639  | 14,866           | 21,576            | 13.9   | 7.2              | 5.8               |

<sup>1</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies

(S) = Indicates imputation of more than 50 percent

(--) = Indicates data not collected

NOTES: Rankings were based on total (company, Federal, and other) R&D funds.

Starting in 1999, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. Statistics for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-22. Company and other non-Federal funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company, ranked by size of nonfederally funded R&D program: 2001

| Industry and size of company  | NAICS codes                  | Company and other non-Federal R&D funds |                     |                      | Company and other non-Federal R&D funds<br>as a percent of net sales |                     |                      |
|---|------------------------------|---|---------------------|----------------------|--|---------------------|----------------------|
|   |                              | First 4<br>companies                    | Next 4<br>companies | Next 12<br>companies | First 4<br>companies   | Next 4<br>companies | Next 12<br>companies |
|   |                              | [In millions of dollars]                |                     |                      | [Percent]  |                     |                      |
| Distribution by industry:   |                              |   |                     |                      |  |                     |                      |
| All industries  | 21-23, 31-33, 42, 44-81      | 19,482                                  | 13,730              | 20,675               | 13.8   | 6.4                 | 5.4                  |
| Manufacturing   | 31-33                        | 18,479                                  | 9,751               | 14,844               | 12.5   | 3.7                 | 5.4                  |
| Food  | 311                          | 771                                     | 237                 | 322                  | 1.0  | 0.4                 | 0.5                  |
| Beverage and tobacco products                                       | 312                          | 119                                     | 31                  | 1                    | 0.4  | 0.6                 | 0.1                  |
| Textiles, apparel, and leather                                      | 313-16                       | 59                                      | 37                  | 53                   | 1.0  | 0.9                 | 1.7                  |
| Wood products   | 321                          | 103                                     | 11                  | 7                    | 1.4  | 0.5                 | 0.1                  |
| Paper, printing and support activities                              | 322, 323                     | 2,172                                   | 194                 | 154                  | 3.6  | 0.5                 | 0.7                  |
| Petroleum and coal products   | 324                          | 992                                     | 51                  | 2                    | 0.5  | 0.1                 | 0.0                  |
| Chemicals   | 325                          | 5,313                                   | 3,801               | 3,503                | 7.9  | 8.1                 | 6.1                  |
| Basic chemicals   | 3251                         | 455                                     | 280                 | 467                  | 2.1  | 7.5                 | 2.3 (S)              |
| Resin, synthetic rubber, fibers, and filament                       | 3252                         | 2,214                                   | 204                 | 83                   | 7.3  | 1.7                 | 1.0                  |
| Pharmaceuticals and medicines                                       | 3254                         | 5,294                                   | 2,577               | 1,449                | 8.1  | 7.6                 | 9.1                  |
| Other chemicals   | 325 minus (3251-52, 3254)    | 1,548                                   | 352                 | 431                  | 5.0  | 3.2                 | 2.4                  |
| Plastics and rubber products  | 326                          | 622                                     | 178                 | 211                  | 4.4  | 2.2                 | 2.3                  |
| Nonmetallic mineral products  | 327                          | 216                                     | 84                  | 91                   | 1.4  | 2.0                 | 1.3                  |
| Primary metals  | 331                          | 247                                     | 60                  | 78                   | 1.0  | 0.8                 | 0.5                  |
| Fabricated metal products   | 332                          | 716                                     | 156                 | 177                  | 3.4  | 2.8                 | 0.8                  |
| Machinery   | 333                          | 2,239                                   | 752                 | 960                  | 9.3  | 5.4                 | 3.8                  |
| Computer and electronic products                                    | 334                          | 13,213                                  | 3,387               | 5,755                | 18.7   | 6.7                 | 6.8                  |
| Computers and peripheral equipment                                  | 3341                         | 1,797                                   | 430                 | 378                  | 6.8  | 9.8                 | 6.0                  |
| Communications equipment  | 3342                         | 9,461                                   | 893                 | 1,072                | 20.6   | 15.1                | 7.0                  |
| Semiconductor and other electronic components                       | 3344                         | 5,876                                   | 1,839               | 2,599                | 12.9   | 6.2                 | 17.4                 |
| Navigational, measuring, electromedical,<br>and control instruments | 3345                         | 3,211                                   | 1,129               | 1,119                | 5.7  | 12.3                | 9.7                  |
| Other computer and electronic products                              | 334 minus (3341-42, 3344-45) | 263                                     | 61                  | 44                   | 13.7   | 8.7                 | 3.4                  |
| Electrical equipment, appliances, and components                    | 335                          | 1,917 (S)                               | 329                 | 402                  | 2.0 (S)  | 2.1                 | 2.8                  |
| Transportation equipment  | 336                          | 13,551                                  | 3,300               | 2,145                | 4.2  | 3.4                 | 2.4                  |
| Motor vehicles, trailers, and parts                                 | 3361-63                      | 13,551                                  | 812                 | 905                  | 4.2  | 2.8                 | 1.7                  |
| Aerospace products and parts  | 3364                         | 3,300                                   | 585                 | 187                  | 3.4  | 1.8                 | 3.3                  |
| Other transportation equipment                                      | 336 minus (3361-64)          | 593 (S)                                 | 116                 | 50                   | 3.0  | 1.7 (S)             | 1.2                  |

See explanatory information and SOURCE at end of table.

Table A-22. Company and other non-Federal funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company, ranked by size of nonfederally funded R&D program: 2001

Page 2 of 3

| Industry and size of company                           | NAICS codes                               | Company and other non-Federal R&D funds |                     |                      | Company and other non-Federal R&D funds<br>as a percent of net sales |                     |                      |
|--|---|---|---------------------|----------------------|--|---------------------|----------------------|
|  |   | First 4<br>companies                    | Next 4<br>companies | Next 12<br>companies | First 4<br>companies   | Next 4<br>companies | Next 12<br>companies |
|  |   | [In millions of dollars]                |                     |                      | [Percent]  |                     |                      |
| Distribution by industry:                              |   |   |                     |                      |  |                     |                      |
| Furniture and related products                         | 337                                       | 131                                     | 58                  | 38                   | 1.0 (S)  | 1.0                 | 0.8                  |
| Miscellaneous manufacturing                            | 339                                       | 3,930                                   | 638                 | 698                  | 13.7   | 7.3                 | 4.4                  |
| Medical equipment and supplies                         | 3391                                      | 3,930                                   | 625                 | 512                  | 13.7   | 7.7 (S)             | 6.3                  |
| Other miscellaneous manufacturing                      | 339 minus (3391)                          | 310                                     | 84                  | 95                   | 3.0  | 2.7                 | 2.1                  |
| Other manufacturing                                    | 31-33 minus (311-16, 321-27, 331-37, 339) | --                                      | --                  | --                   | --   | --                  | --                   |
| Nonmanufacturing                                       | 21-23, 42, 44-81                          | 13,995                                  | 5,444               | 8,388                | 13.7   | 19.0                | 6.0                  |
| Mining, extraction, and support activities             | 21  | 712                                     | 84                  | 40                   | 1.8  | 0.5                 | 0.7                  |
| Utilities  | 22  | 38                                      | 28                  | 34                   | 0.1  | 0.1                 | 0.0                  |
| Construction   | 23  | 154                                     | 52                  | 15                   | 1.4  | 2.5                 | 0.2                  |
| Trade  | 42, 44, 45                                | 11,206                                  | 3,942               | 4,714                | 12.1   | 9.4                 | 15.4                 |
| Transportation and warehousing                         | 48, 49                                    | 376                                     | 21                  | 6                    | 0.8  | 0.2                 | 0.1                  |
| Information  | 51  | 7,401                                   | 1,260               | 2,057                | 18.3   | 1.1                 | 13.0                 |
| Publishing   | 511                                       | 6,617                                   | 856                 | 1,679                | 22.2   | 22.3                | 11.1                 |
| Newspaper, periodical, book, and database              | 5111                                      | 376                                     | 55                  | 23                   | 3.7  | 1.4                 | 0.3                  |
| Software   | 5112                                      | 6,617                                   | 856                 | 1,600                | 22.2   | 22.3                | 18.2                 |
| Broadcasting and telecommunications                    | 513                                       | 819                                     | 129 (S)             | 91                   | 0.4  | 0.3                 | 1.9                  |
| Radio and television broadcasting                      | 5131                                      | 22                                      | 0                   | 0                    | (D)  | 0.0                 | 0.0                  |
| Telecommunications                                     | 5133                                      | 819                                     | 129 (S)             | 55                   | 0.4  | 0.3                 | 10.8                 |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)                    | (D)                                     | 0                   | 0                    | (D)  | 0.0                 | 0.0                  |
| Other information                                      | 51 minus (511, 513)                       | 1,461                                   | 210                 | 198                  | 4.1  | 7.6                 | 5.7                  |
| Finance, insurance, and real estate                    | 52, 53                                    | 760                                     | 475                 | 431                  | 1.3  | 0.9                 | 0.3                  |
| Professional, scientific, and technical services       | 54  | 2,898 (S)                               | 1,143               | 1,820                | 15.6 (S)   | 52.8                | 26.9                 |
| Architectural, engineering, and related services       | 5413                                      | 780                                     | 314                 | 242                  | 31.1   | 36.4                | 5.4                  |
| Computer systems design and related services           | 5415                                      | 2,109 (S)                               | 458                 | 797                  | 18.8 (S)   | 17.2                | 6.4                  |
| Scientific R&D services                                | 5417                                      | 1,627                                   | 809                 | 1,274                | 15.1 (S)   | 55.6 (S)            | 42.7                 |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417)               | 235                                     | 71                  | 54                   | (D)  | 1.0                 | 1.5                  |
| Management of companies and enterprises                | 55  | 107                                     | 11                  | 1                    | (D)  | 7.7 (S)             | 0.2                  |
| Health care services                                   | 621-23                                    | 282                                     | 30                  | 25                   | 3.7  | (D)                 | 0.4                  |
| Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81                   | 304                                     | 94                  | 97                   | 2.3  | 3.6                 | 0.4                  |

See explanatory information and SOURCE at end of table.

Table A-22. Company and other non-Federal funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company, ranked by size of nonfederally funded R&D program: 2001

Page 3 of 3

| Industry and size of company                              |  | Company and other non-Federal R&D funds |                     |                      | Company and other non-Federal R&D funds<br>as a percent of net sales |                     |                      |
|---|--|---|---------------------|----------------------|--|---------------------|----------------------|
|   |  | First 4<br>companies                    | Next 4<br>companies | Next 12<br>companies | First 4<br>companies   | Next 4<br>companies | Next 12<br>companies |
|   |  | [In millions of dollars]                |                     |                      | [Percent]  |                     |                      |
| Distribution by size of company:<br>[Number of employees] |  |   |                     |                      |  |                     |                      |
| Total   |  | 19,482                                  | 13,730              | 20,675               | 13.8   | 6.4                 | 5.4                  |
| 5 to 24   |  | 28                                      | 17                  | 31                   | 102.5  | 11.2 (S)            | 2.5                  |
| 25 to 49  |  | 146                                     | 72                  | 103                  | 69.0   | 157.0               | 150.5                |
| 50 to 99  |  | 159                                     | 94                  | 202                  | 63.9   | 141.4               | 169.1                |
| 100 to 249  |  | 327                                     | 254                 | 584                  | 101.5  | 13.7 (S)            | 149.2                |
| 250 to 499  |  | 467                                     | 311                 | 693                  | 154.9  | 101.6               | 66.4                 |
| 500 to 999  |  | 870                                     | 566                 | 1,099                | 110.5  | 60.0                | 32.1                 |
| 1,000 to 4,999  |  | 2,129                                   | 1,503               | 2,943                | 81.4   | 17.6                | 22.6                 |
| 5,000 to 9,999  |  | 2,902                                   | 1,972               | 3,878                | 19.3   | 12.1                | 9.4                  |
| 10,000 to 24,999  |  | 7,313                                   | 4,138               | 7,258                | 17.8   | 13.5                | 7.1                  |
| 25,000 or more  |  | 19,482                                  | 13,214              | 18,392               | 13.8   | 6.0                 | 4.8                  |

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies

(S) = Indicates imputation of more than 50 percent.

(--) = Indicates data not collected.

NOTES: Rankings were based on company and other R&D funds.

The R&D in this table is the industrial R&D performed within company facilities funded from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and State governments. Excluded from this table are company-funded R&D not performed within the company (e.g., R&D contracted out to other organizations) and company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations).

Starting in 1999, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. Statistics for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-23. Federal funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company, ranked by size of federally funded R&D program: 2001

Page 1 of 3

| Industry and size of company  | NAICS codes                  | Federal R&D funds <sup>1</sup> |                     |                      | Federal R&D funds<br>as a percent of net sales |                     |                      |
|---|------------------------------|--------------------------------|---------------------|----------------------|--|---------------------|----------------------|
|   |                              | First 4<br>companies           | Next 4<br>companies | Next 12<br>companies | First 4<br>companies                           | Next 4<br>companies | Next 12<br>companies |
|   |                              | [In millions of dollars]       |                     |                      | [Percent]                                      |                     |                      |
| Distribution by industry:   |                              |                                |                     |                      |  |                     |                      |
| All industries  | 21-23, 31-33, 42, 44-81      | 6,850                          | 2,920               | 2,907                | 19.3   | 3.2                 | 1.8 (S)              |
| Manufacturing   | 31-33                        | 6,834                          | 2,041               | 1,862                | 7.5  | 4.3                 | 1.2 (S)              |
| Food  | 311                          | 0                              | 0                   | 0                    | 0.0  | 0.0                 | 0.0                  |
| Beverage and tobacco products                                       | 312                          | 0                              | 0                   | 0                    | 0.0  | 0.0                 | 0.0                  |
| Textiles, apparel, and leather                                      | 313-16                       | (D)                            | 0                   | 0                    | (D)  | 0.0                 | 0.0                  |
| Wood products   | 321                          | 0                              | 0                   | 0                    | 0.0  | 0.0                 | 0.0                  |
| Paper, printing and support activities                              | 322, 323                     | (D)                            | 0                   | 0                    | (D)  | 0.0                 | 0.0                  |
| Petroleum and coal products   | 324                          | (D)                            | 0                   | 0                    | (D)  | 0.0                 | 0.0                  |
| Chemicals   | 325                          | 155                            | 12                  | 4                    | 0.4  | 0.2                 | 0.0                  |
| Basic chemicals   | 3251                         | 29                             | 3                   | 0                    | 0.3  | 0.1                 | 1.0                  |
| Resin, synthetic rubber, fibers, and filament                       | 3252                         | 13                             | 0                   | 0                    | 0.0  | 0.0                 | 0.0                  |
| Pharmaceuticals and medicines                                       | 3254                         | 0                              | 0                   | 0                    | 0.0  | 0.0                 | 0.0                  |
| Other chemicals   | 325 minus (3251-52, 3254)    | (D)                            | 0                   | 0                    | (D)  | 0.0                 | 0.0                  |
| Plastics and rubber products  | 326                          | (D)                            | 0                   | 0                    | (D)  | 0.0                 | 0.0                  |
| Nonmetallic mineral products  | 327                          | 0                              | 0                   | 0                    | 0.1  | 0.0                 | 0.0                  |
| Primary metals  | 331                          | 6                              | 0                   | 0                    | 0.0  | 0.0                 | 0.0                  |
| Fabricated metal products   | 332                          | 50                             | 1                   | 0                    | 1.9  | 0.0 (S)             | 0.0                  |
| Machinery   | 333                          | (D)                            | 1                   | 0                    | (D)  | 0.1                 | 0.0                  |
| Computer and electronic products                                    | 334                          | 5,151                          | 385                 | 119                  | 13.8   | 1.8                 | 1.8                  |
| Computers and peripheral equipment                                  | 3341                         | (D)                            | 0                   | 0                    | (D)  | 0.0                 | 0.0                  |
| Communications equipment  | 3342                         | 291                            | 7                   | 0                    | (D)  | 0.1                 | 0.0                  |
| Semiconductor and other electronic components                       | 3344                         | 135                            | 1                   | 0                    | 4.1  | 0.0                 | 0.0                  |
| Navigational, measuring, electromedical,<br>and control instruments | 3345                         | 5,151                          | 48                  | 17                   | 13.8   | 7.1                 | 0.1                  |
| Other computer and electronic products                              | 334 minus (3341-42, 3344-45) | (D)                            | 0                   | 0                    | (D)  | 0.0                 | 0.0                  |
| Electrical equipment, appliances, and components                    | 335                          | 256 (S)                        | 12                  | (D)                  | (D)  | 1.0                 | 0.0                  |
| Transportation equipment  | 336                          | 3,723                          | 1,026               | 212                  | 3.7  | 3.4                 | 0.1                  |
| Motor vehicles, trailers, and parts                                 | 3361-63                      | (D)                            | 8                   | 0                    | (D)  | 0.0                 | 0.0                  |
| Aerospace products and parts  | 3364                         | 3,019                          | 713                 | 52                   | 2.7  | 4.3                 | 1.8                  |
| Other transportation equipment                                      | 336 minus (3361-64)          | (D)                            | 0                   | 0                    | (D)  | 0.0                 | 0.0                  |

See explanatory information and SOURCE at end of table.

Table A-23. Federal funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company, ranked by size of federally funded R&D program: 2001

Page 2 of 3

| Industry and size of company                           | NAICS codes                               | Federal R&D funds <sup>1</sup> |                  |                   | Federal R&D funds as a percent of net sales |                  |                   |
|--|---|--------------------------------|------------------|-------------------|---|------------------|-------------------|
|  |   | First 4 companies              | Next 4 companies | Next 12 companies | First 4 companies                           | Next 4 companies | Next 12 companies |
|  |   | [In millions of dollars]       |                  |                   | [Percent]                                   |                  |                   |
| Distribution by industry:                              |   |                                |                  |                   |   |                  |                   |
| Furniture and related products                         | 337                                       | 0                              | 0                | 0                 | 0.0   | 0.0              | 0.0               |
| Miscellaneous manufacturing                            | 339                                       | 23                             | 1                | 0                 | 0.7   | 0.1              | 0.0               |
| Medical equipment and supplies                         | 3391                                      | 13                             | 0                | 0                 | 1.3   | 0.0              | 0.0               |
| Other miscellaneous manufacturing                      | 339 minus (3391)                          | (D)                            | 0                | 0                 | (D)   | 0.0              | 0.0               |
| Other manufacturing                                    | 31-33 minus (311-16, 321-27, 331-37, 339) | --                             | --               | --                | --  | --               | --                |
| Nonmanufacturing                                       | 21-23, 42, 44-81                          | 2,178                          | 297              | 497               | 26.0 (S)                                    | 46.3             | 30.4              |
| Mining, extraction, and support activities             | 21  | (D)                            | 0                | 0                 | (D)   | 0.0              | 0.0               |
| Utilities  | 22  | 18                             | 0                | 0                 | 0.1   | 0.0              | 0.0               |
| Construction   | 23  | 0                              | 0                | 0                 | 0.0   | 0.0              | 0.0               |
| Trade  | 42, 44, 45                                | 21                             | 2                | 0                 | (D)   | 113.2            | 0.0               |
| Transportation and warehousing                         | 48, 49                                    | 10                             | 0                | 0                 | 0.1   | 0.0              | 0.0               |
| Information  | 51  | 67                             | 14 (S)           | 0                 | (D)   | 19.3 (S)         | 1.4               |
| Publishing   | 511                                       | 35                             | 1                | 0                 | 11.8  | 1.9              | 0.0               |
| Newspaper, periodical, book, and database              | 5111                                      | 0                              | 0                | 0                 | 0.0   | 0.0              | 0.0               |
| Software   | 5112                                      | 35                             | 1                | 0                 | 11.8  | 1.9              | 0.0               |
| Broadcasting and telecommunications                    | 513                                       | (D)                            | 0                | 0                 | (D)   | 0.0              | 0.0               |
| Radio and television broadcasting                      | 5131                                      | 0                              | 0                | 0                 | 0.0   | 0.0              | 0.0               |
| Telecommunications                                     | 5133                                      | (D)                            | 0                | 0                 | (D)   | 0.0              | 0.0               |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)                    | 0                              | 0                | 0                 | 0.0   | 0.0              | 0.0               |
| Other information                                      | 51 minus (511, 513)                       | (D)                            | 0                | 0                 | (D)   | 0.0              | 0.0               |
| Finance, insurance, and real estate                    | 52, 53                                    | (D)                            | 0                | 0                 | (D)   | 0.0              | 0.0               |
| Professional, scientific, and technical services       | 54  | 2,178                          | 297              | 497               | 26.0 (S)                                    | 46.3             | 30.4              |
| Architectural, engineering, and related services       | 5413                                      | 547                            | 157              | 161               | 67.9  | 17.5             | 7.9               |
| Computer systems design and related services           | 5415                                      | 108                            | 37               | 39                | 24.8  | 83.3             | 0.5               |
| Scientific R&D services                                | 5417                                      | 1,929                          | 187              | 325               | 23.5 (S)                                    | 68.7             | 35.6              |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417)               | 4                              | 0                | 0                 | 9.4   | 0.0              | 0.0               |
| Management of companies and enterprises                | 55  | 0                              | 0                | 0                 | 0.0   | 0.0              | 0.0               |
| Health care services                                   | 621-23                                    | 13                             | 0                | 0                 | 2.7   | 0.0              | 0.0               |
| Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81                   | 15                             | 0                | 0                 | 13.6 (S)                                    | 0.0              | 0.0               |

See explanatory information and SOURCE at end of table.

Table A-23. Federal funds for industrial R&D performance in the U.S. as a percent of net sales of companies that performed industrial R&D in the U.S., by industry and size of company, ranked by size of federally funded R&D program: 2001

Page 3 of 3

| Industry and size of company                              |  | Federal R&D funds <sup>1</sup> |                  |                   | Federal R&D funds as a percent of net sales |                  |                   |
|---|--|--------------------------------|------------------|-------------------|---|------------------|-------------------|
|   |  | First 4 companies              | Next 4 companies | Next 12 companies | First 4 companies                           | Next 4 companies | Next 12 companies |
|   |  | [In millions of dollars]       |                  |                   | [Percent]                                   |                  |                   |
| Distribution by size of company:<br>[Number of employees] |  |                                |                  |                   |   |                  |                   |
| Total   |  | 6,850                          | 2,920            | 2,907             | 19.3  | 3.2              | 1.8 (S)           |
| 5 to 24   |  | 10                             | 4                | 3                 | 75.4  | 71.6             | 18.5              |
| 25 to 49  |  | 21                             | 14               | 17                | 89.1  | 55.2             | 0.8               |
| 50 to 99  |  | 87                             | 43               | 80                | 81.6  | 91.3             | 65.6              |
| 100 to 249  |  | 106                            | 67               | 143               | 91.4  | 88.3             | 57.1              |
| 250 to 499  |  | 194                            | 126              | 181               | 80.6  | 65.4             | 27.1              |
| 500 to 999  |  | 304                            | 188              | 124               | 72.6  | 28.3             | 9.7               |
| 1,000 to 4,999  |  | 475                            | 78               | 46                | 36.6  | 7.4              | 0.6               |
| 5,000 to 9,999  |  | 1,548                          | 85               | 19                | 29.2  | 1.4              | 0.0               |
| 10,000 to 24,999  |  | 802                            | 81               | 22                | 6.6   | 0.4              | 0.0               |
| 25,000 or more  |  | 6,834                          | 2,336            | 1,047             | 7.5   | 3.5              | 0.3               |

<sup>1</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.  
(S) = Indicates imputation of more than 50 percent.  
(-) = Indicates data not collected.

NOTES: Rankings were based on Federal R&D funds.

Starting in 1999, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. Statistics for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-24. Trends in total (Federal plus company and other) funds for performance of industrial basic research, applied research, and development in the U.S., in current and in constant dollars: 1953-2001

Page 1 of 2

| Year                     | Total   |          | Basic research |          | Applied research |          | Development |          |
|--------------------------|---------|----------|----------------|----------|------------------|----------|-------------|----------|
|                          | Current | Constant | Current        | Constant | Current          | Constant | Current     | Constant |
|                          | dollars | 1996     | dollars        | 1996     | dollars          | 1996     | dollars     | 1996     |
| [In millions of dollars] |         |          |                |          |                  |          |             |          |
| 1953 <sup>1</sup>        | 3,630   | 18,857   | 151            | 784      | 726              | 3,771    | 2,753       | 14,301   |
| 1954 <sup>1</sup>        | 4,070   | 20,936   | 166            | 854      | 814              | 4,187    | 3,090       | 15,895   |
| 1955 <sup>1</sup>        | 4,640   | 23,458   | 189            | 956      | 928              | 4,692    | 3,523       | 17,811   |
| 1956                     | 6,605   | 32,298   | 253            | 1,237    | 1,268            | 6,200    | 5,084       | 24,861   |
| 1957                     | 7,731   | 36,588   | 271            | 1,283    | 1,670            | 7,903    | 5,790       | 27,402   |
| 1958                     | 8,389   | 38,766   | 295            | 1,363    | 1,911            | 8,831    | 6,183       | 28,572   |
| 1959                     | 9,618   | 43,958   | 320            | 1,463    | 1,991            | 9,100    | 7,307       | 33,396   |
| 1960                     | 10,509  | 47,359   | 376            | 1,694    | 2,029            | 9,144    | 8,104       | 36,521   |
| 1961                     | 10,908  | 48,610   | 395            | 1,760    | 1,977            | 8,810    | 8,536       | 38,039   |
| 1962                     | 11,464  | 50,413   | 488            | 2,146    | 2,449            | 10,770   | 8,527       | 37,498   |
| 1963                     | 12,630  | 54,913   | 522            | 2,270    | 2,457            | 10,683   | 9,651       | 41,961   |
| 1964                     | 13,512  | 57,892   | 549            | 2,352    | 2,600            | 11,140   | 10,363      | 44,400   |
| 1965                     | 14,185  | 59,651   | 592            | 2,489    | 2,658            | 11,177   | 10,935      | 45,984   |
| 1966                     | 15,548  | 63,565   | 624            | 2,551    | 2,843            | 11,623   | 12,081      | 49,391   |
| 1967                     | 16,385  | 64,994   | 629            | 2,495    | 2,915            | 11,563   | 12,841      | 50,936   |
| 1968                     | 17,429  | 66,270   | 642            | 2,441    | 3,124            | 11,878   | 13,663      | 51,951   |
| 1969                     | 18,308  | 66,357   | 618            | 2,240    | 3,287            | 11,914   | 14,403      | 52,204   |
| 1970                     | 18,067  | 62,171   | 602            | 2,072    | 3,427            | 11,793   | 14,038      | 48,307   |
| 1971                     | 18,320  | 60,026   | 590            | 1,933    | 3,415            | 11,189   | 14,315      | 46,904   |
| 1972                     | 19,552  | 61,446   | 593            | 1,864    | 3,514            | 11,043   | 15,445      | 48,539   |
| 1973                     | 21,249  | 63,241   | 631            | 1,878    | 3,825            | 11,384   | 16,793      | 49,979   |
| 1974                     | 22,887  | 62,499   | 699            | 1,909    | 4,288            | 11,709   | 17,900      | 48,880   |
| 1975                     | 24,187  | 60,422   | 730            | 1,824    | 4,570            | 11,416   | 18,887      | 47,182   |
| 1976                     | 26,997  | 63,823   | 819            | 1,936    | 5,112            | 12,085   | 21,066      | 49,801   |
| 1977                     | 29,825  | 66,248   | 911            | 2,024    | 5,636            | 12,519   | 23,278      | 51,706   |
| 1978 <sup>1</sup>        | 33,304  | 69,052   | 1,035          | 2,146    | 6,300            | 13,062   | 25,969      | 53,844   |
| 1979                     | 38,226  | 73,160   | 1,158          | 2,216    | 7,225            | 13,828   | 29,843      | 57,116   |
| 1980 <sup>1</sup>        | 44,505  | 78,024   | 1,325          | 2,323    | 8,450            | 14,814   | 34,730      | 60,887   |
| 1981                     | 51,810  | 83,069   | 1,614          | 2,588    | 10,699           | 17,154   | 39,497      | 63,327   |
| 1982 <sup>1</sup>        | 58,650  | 88,528   | 1,904          | 2,874    | 12,323           | 18,601   | 44,423      | 67,054   |
| 1983                     | 65,268  | 94,756   | 2,223          | 3,227    | 13,927           | 20,219   | 49,118      | 71,310   |
| 1984                     | 74,800  | 104,703  | 2,608          | 3,651    | 15,765           | 22,067   | 56,427      | 78,985   |
| 1985                     | 84,239  | 114,315  | 2,862          | 3,884    | 18,255           | 24,773   | 63,122      | 85,659   |
| 1986 <sup>2</sup>        | 87,823  | 116,615  | 4,047          | 5,374    | 19,759           | 26,237   | 64,017      | 85,005   |
| 1987 <sup>2</sup>        | 92,155  | 118,787  | 4,324          | 5,574    | 19,813           | 25,539   | 68,018      | 87,675   |
| 1988 <sup>2,3</sup>      | 97,015  | 120,951  | 4,500          | 5,610    | 20,748           | 25,867   | 71,767      | 89,474   |
| 1989 <sup>2,3</sup>      | 102,055 | 122,559  | 5,216          | 6,264    | 22,691           | 27,250   | 74,148      | 89,045   |
| 1990 <sup>2,3</sup>      | 109,727 | 126,837  | 5,128          | 5,928    | 24,785           | 28,650   | 79,814      | 92,260   |
| 1991 <sup>2,3</sup>      | 116,952 | 130,439  | 7,837          | 8,741    | 27,446           | 30,611   | 81,669      | 91,087   |
| 1992 <sup>2,4</sup>      | 119,110 | 129,693  | 7,002          | 7,624    | 26,168           | 28,493   | 85,940      | 93,576   |
| 1993 <sup>2,4</sup>      | 117,400 | 124,827  | 6,919          | 7,357    | 24,686           | 26,248   | 85,796      | 91,224   |
| 1994 <sup>2,4</sup>      | 119,595 | 124,565  | 7,017          | 7,309    | 23,490           | 24,466   | 89,088      | 92,790   |

See explanatory information and SOURCE at end of table.



Table A-24. Trends in total (Federal plus company and other) funds for performance of industrial basic research, applied research, and development in the U.S., in current and in constant dollars: 1953-2001

Page 2 of 2

| Year                    | Total                    |                       | Basic research  |                       | Applied research |                       | Development     |                       |
|-------------------------|--------------------------|-----------------------|-----------------|-----------------------|------------------|-----------------------|-----------------|-----------------------|
|                         | Current dollars          | Constant 1996 dollars | Current dollars | Constant 1996 dollars | Current dollars  | Constant 1996 dollars | Current dollars | Constant 1996 dollars |
|                         | [In millions of dollars] |                       |                 |                       |                  |                       |                 |                       |
| 1995 <sup>2,4</sup>     | 132,103                  | 134,662               | 6,099           | 6,217                 | 27,454           | 27,986                | 98,552          | 100,461               |
| 1996 <sup>2,4</sup>     | 144,667                  | 144,667               | 8,207           | 8,207                 | 29,241           | 29,241                | 107,218         | 107,218               |
| 1997 <sup>2,4</sup>     | 157,539                  | 154,526               | 10,419          | 10,220                | 32,642           | 32,018                | 114,478         | 112,288               |
| 1998 <sup>2,4,5</sup>   | 169,180                  | 163,934               | 6,421           | 6,222                 | 32,438           | 31,432                | 130,320         | 126,279               |
| 1999 <sup>2,4,5</sup>   | 182,711                  | 174,592               | 7,117           | 6,801                 | 36,692           | 35,062                | 139,016         | 132,839               |
| 2000 <sup>2,4,5</sup>   | 199,539                  | 186,677               | 7,490           | 7,007                 | 39,082           | 36,512                | 152,967         | 143,107               |
| 2001 <sup>2,4,5,6</sup> | 198,505                  | 181,416               | 7,911           | 7,230                 | 43,486           | 39,768                | 147,108         | 134,443               |

<sup>1</sup> Character-of-work estimates were made by the National Science Foundation. See National Science Foundation, *National Patterns of R&D Resources: 1996* (NSF 99-335).

<sup>2</sup> The character-of-work estimation procedure was revised for 1986 and later years and resulting statistics are not directly comparable with earlier years. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

<sup>3</sup> As a result of a new sample design, statistics for 1988-91 were revised after they were originally published and are not directly comparable with statistics for earlier years. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

<sup>4</sup> As a result of annual sampling, implemented to produce statistics that better reflect R&D performance among firms in nonmanufacturing industries and small firms in all industries, statistics for 1992 and later years are not directly comparable with statistics for earlier years. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

<sup>5</sup> Using data collected during recent cycles of the survey, NSF investigated a potential reporting anomaly for basic research and found that several large companies, known to develop and manufacture products, reported all R&D as basic research. This phenomenon prompted a renewed effort to strengthen character of work estimates produced from the survey. Consequently, improved edit checks were applied during statistical processing to produce the 2001 basic research, applied research, and development estimates. Also, estimates for 1998, 1999, and 2000 were recalculated.

<sup>6</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

NOTE: Gross domestic product (GDP) implicit price deflators were used to convert current dollars to constant (1996) dollars.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-25. Trends in company and other non-Federal funds for performance of industrial basic research, applied research, and development in the U.S., in current and in constant dollars: 1953-2001

Page 1 of 2

| Year                | Total                    |                       | Basic research  |                       | Applied research |                       | Development     |                       |
|---------------------|--------------------------|-----------------------|-----------------|-----------------------|------------------|-----------------------|-----------------|-----------------------|
|                     | Current dollars          | Constant 1996 dollars | Current dollars | Constant 1996 dollars | Current dollars  | Constant 1996 dollars | Current dollars | Constant 1996 dollars |
|                     | [In millions of dollars] |                       |                 |                       |                  |                       |                 |                       |
| 1953 <sup>1</sup>   | 2,200                    | 11,429                | 132             | 686                   | 438              | 2,275                 | 1,630           | 8,468                 |
| 1954 <sup>1</sup>   | 2,320                    | 11,934                | 143             | 736                   | 492              | 2,531                 | 1,685           | 8,668                 |
| 1955 <sup>1</sup>   | 2,460                    | 12,437                | 162             | 819                   | 560              | 2,831                 | 1,738           | 8,787                 |
| 1956                | 3,277                    | 16,024                | 216             | 1,056                 | 794              | 3,883                 | 2,267           | 11,086                |
| 1957                | 3,396                    | 16,072                | 230             | 1,088                 | 992              | 4,695                 | 2,174           | 10,289                |
| 1958                | 3,630                    | 16,774                | 252             | 1,165                 | 1,137            | 5,254                 | 2,241           | 10,356                |
| 1959                | 3,983                    | 18,204                | 248             | 1,133                 | 1,178            | 5,384                 | 2,557           | 11,686                |
| 1960                | 4,428                    | 19,955                | 297             | 1,338                 | 1,196            | 5,390                 | 2,935           | 13,227                |
| 1961                | 4,668                    | 20,802                | 314             | 1,399                 | 1,165            | 5,192                 | 3,189           | 14,211                |
| 1962                | 5,029                    | 22,115                | 345             | 1,517                 | 1,438            | 6,324                 | 3,246           | 14,274                |
| 1963                | 5,360                    | 23,304                | 375             | 1,630                 | 1,450            | 6,304                 | 3,535           | 15,370                |
| 1964                | 5,792                    | 24,816                | 384             | 1,645                 | 1,560            | 6,684                 | 3,848           | 16,487                |
| 1965                | 6,445                    | 27,103                | 406             | 1,707                 | 1,620            | 6,812                 | 4,419           | 18,583                |
| 1966                | 7,216                    | 29,501                | 451             | 1,844                 | 1,804            | 7,375                 | 4,961           | 20,282                |
| 1967                | 8,020                    | 31,813                | 427             | 1,694                 | 1,849            | 7,334                 | 5,744           | 22,785                |
| 1968                | 8,869                    | 33,722                | 462             | 1,757                 | 2,081            | 7,913                 | 6,326           | 24,053                |
| 1969                | 9,857                    | 35,727                | 458             | 1,660                 | 2,272            | 8,235                 | 7,127           | 25,832                |
| 1970                | 10,288                   | 35,403                | 444             | 1,528                 | 2,378            | 8,183                 | 7,466           | 25,692                |
| 1971                | 10,654                   | 34,908                | 456             | 1,494                 | 2,441            | 7,998                 | 7,757           | 25,416                |
| 1972                | 11,535                   | 36,251                | 463             | 1,455                 | 2,562            | 8,052                 | 8,510           | 26,744                |
| 1973                | 13,104                   | 39,000                | 499             | 1,485                 | 2,832            | 8,429                 | 9,773           | 29,086                |
| 1974                | 14,667                   | 40,052                | 536             | 1,464                 | 3,263            | 8,910                 | 10,868          | 29,678                |
| 1975                | 15,582                   | 38,926                | 573             | 1,431                 | 3,440            | 8,594                 | 11,569          | 28,901                |
| 1976                | 17,436                   | 41,220                | 634             | 1,499                 | 3,912            | 9,248                 | 12,890          | 30,473                |
| 1977                | 19,340                   | 42,959                | 701             | 1,557                 | 4,311            | 9,576                 | 14,328          | 31,826                |
| 1978 <sup>1</sup>   | 22,115                   | 45,853                | 785             | 1,628                 | 4,870            | 10,097                | 16,460          | 34,128                |
| 1979                | 25,708                   | 49,202                | 893             | 1,709                 | 5,670            | 10,852                | 19,145          | 36,641                |
| 1980 <sup>1</sup>   | 30,476                   | 53,429                | 1,035           | 1,815                 | 6,550            | 11,483                | 22,891          | 40,131                |
| 1981                | 35,428                   | 56,803                | 1,313           | 2,105                 | 8,359            | 13,402                | 25,756          | 41,295                |
| 1982 <sup>1</sup>   | 40,105                   | 60,536                | 1,523           | 2,299                 | 9,363            | 14,133                | 29,219          | 44,104                |
| 1983                | 44,588                   | 64,733                | 1,760           | 2,555                 | 10,286           | 14,933                | 32,542          | 47,244                |
| 1984                | 51,404                   | 71,954                | 2,132           | 2,984                 | 11,541           | 16,155                | 37,731          | 52,815                |
| 1985                | 57,043                   | 77,409                | 2,373           | 3,220                 | 12,908           | 17,517                | 41,762          | 56,673                |
| 1986 <sup>2</sup>   | 59,932                   | 79,580                | 3,496           | 4,642                 | 15,082           | 20,027                | 41,354          | 54,912                |
| 1987 <sup>2</sup>   | 61,403                   | 79,148                | 3,583           | 4,618                 | 15,153           | 19,532                | 42,667          | 54,997                |
| 1988 <sup>2,3</sup> | 66,672                   | 83,122                | 3,507           | 4,372                 | 16,531           | 20,610                | 46,634          | 58,140                |
| 1989 <sup>2,3</sup> | 73,501                   | 88,268                | 3,832           | 4,602                 | 17,993           | 21,608                | 51,676          | 62,058                |
| 1990 <sup>2,3</sup> | 81,602                   | 94,327                | 3,760           | 4,346                 | 18,432           | 21,306                | 59,410          | 68,674                |
| 1991 <sup>2,3</sup> | 90,580                   | 101,026               | 6,125           | 6,831                 | 21,425           | 23,896                | 63,030          | 70,299                |
| 1992 <sup>2,4</sup> | 94,388                   | 102,774               | 5,816           | 6,333                 | 21,184           | 23,066                | 67,385          | 73,372                |
| 1993 <sup>2,4</sup> | 94,591                   | 100,575               | 5,961           | 6,338                 | 19,956           | 21,219                | 68,678          | 73,023                |
| 1994 <sup>2,4</sup> | 97,131                   | 101,168               | 6,078           | 6,331                 | 19,372           | 20,177                | 71,683          | 74,662                |

See explanatory information and SOURCE at end of table.

Table A-25. Trends in company and other non-Federal funds for performance of industrial basic research, applied research, and development in the U.S., in current and in constant dollars: 1953-2001

Page 2 of 2

| Year                  | Total                    |                       | Basic research  |                       | Applied research |                       | Development     |                       |
|-----------------------|--------------------------|-----------------------|-----------------|-----------------------|------------------|-----------------------|-----------------|-----------------------|
|                       | Current dollars          | Constant 1996 dollars | Current dollars | Constant 1996 dollars | Current dollars  | Constant 1996 dollars | Current dollars | Constant 1996 dollars |
|                       | [In millions of dollars] |                       |                 |                       |                  |                       |                 |                       |
| 1995 <sup>2,4</sup>   | 108,652                  | 110,756               | 5,379           | 5,483                 | 23,755           | 24,215                | 79,516          | 81,056                |
| 1996 <sup>2,4</sup>   | 121,015                  | 121,015               | 6,848           | 6,848                 | 25,370           | 25,370                | 88,798          | 88,798                |
| 1997 <sup>2,4</sup>   | 133,611                  | 131,055               | 8,766           | 8,598                 | 29,782           | 29,212                | 95,064          | 93,246                |
| 1998 <sup>2,4,5</sup> | 145,016                  | 140,519               | 4,851           | 4,701                 | 29,576           | 28,659                | 110,590         | 107,161               |
| 1999 <sup>2,4,5</sup> | 160,176                  | 153,059               | 5,362           | 5,124                 | 33,309           | 31,829                | 121,690         | 116,283               |
| 2000 <sup>2,4,5</sup> | 180,421                  | 168,791               | 6,017           | 5,629                 | 36,130           | 33,801                | 138,274         | 129,361               |
| 2001 <sup>2,4,5</sup> | 181,606                  | 165,971               | 7,157           | 6,541                 | 39,883           | 36,449                | 134,566         | 122,981               |

<sup>1</sup> Character-of-work estimates were made by the National Science Foundation. See National Science Foundation, *National Patterns of R&D Resources: 1996* (NSF 99-335).

<sup>2</sup> The character-of-work estimation procedure was revised for 1986 and later years and resulting statistics are not directly comparable with earlier years. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

<sup>3</sup> As a result of a new sample design, statistics for 1988-91 were revised after they were originally published and are not directly comparable with statistics for earlier years. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>

<sup>4</sup> As a result of annual sampling, implemented to produce statistics that better reflect R&D performance among firms in nonmanufacturing industries and small firms in all industries, statistics for 1992 and later years are not directly comparable with statistics for earlier years. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

<sup>5</sup> Using data collected during recent cycles of the survey, NSF investigated a potential reporting anomaly for basic research and found that several large companies, known to develop and manufacture products, reported all R&D as basic research. This phenomenon prompted a renewed effort to strengthen character of work estimates produced from the survey. Consequently, improved edit checks were applied during statistical processing to produce the 2001 basic research, applied research, and development estimates. Also, estimates for 1998, 1999, and 2000 were recalculated.

NOTES: The R&D in this table is the industrial R&D performed within company facilities funded from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and State governments. Excluded from this table are company-funded R&D not performed within the company (e.g., R&D contracted out to other organizations) and company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations).

Gross domestic product (GDP) implicit price deflators were used to convert current dollars to constant (1996) dollars.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-26. Trends in Federal funds for performance of industrial basic research, applied research, and development in the U.S., in current and in constant dollars: 1953-2001

Page 1 of 2

| Year                | Total                    |                       | Basic research  |                       | Applied research |                       | Development     |                       |
|---------------------|--------------------------|-----------------------|-----------------|-----------------------|------------------|-----------------------|-----------------|-----------------------|
|                     | Current dollars          | Constant 1996 dollars | Current dollars | Constant 1996 dollars | Current dollars  | Constant 1996 dollars | Current dollars | Constant 1996 dollars |
|                     | [In millions of dollars] |                       |                 |                       |                  |                       |                 |                       |
| 1953 <sup>1</sup>   | 1,430                    | 7,429                 | 19              | 99                    | 288              | 1,496                 | 1,123           | 5,834                 |
| 1954 <sup>1</sup>   | 1,750                    | 9,002                 | 23              | 118                   | 322              | 1,656                 | 1,405           | 7,227                 |
| 1955 <sup>1</sup>   | 2,180                    | 11,021                | 27              | 137                   | 368              | 1,860                 | 1,785           | 9,024                 |
| 1956                | 3,328                    | 16,274                | 37              | 181                   | 474              | 2,318                 | 2,817           | 13,775                |
| 1957                | 4,335                    | 20,516                | 41              | 194                   | 678              | 3,209                 | 3,616           | 17,113                |
| 1958                | 4,759                    | 21,992                | 43              | 199                   | 774              | 3,577                 | 3,942           | 18,216                |
| 1959                | 5,635                    | 25,754                | 72              | 329                   | 813              | 3,716                 | 4,750           | 21,709                |
| 1960                | 6,081                    | 27,404                | 79              | 356                   | 833              | 3,754                 | 5,169           | 23,294                |
| 1961                | 6,240                    | 27,807                | 81              | 361                   | 812              | 3,619                 | 5,347           | 23,828                |
| 1962                | 6,434                    | 28,294                | 143             | 629                   | 1,011            | 4,446                 | 5,281           | 23,223                |
| 1963                | 7,270                    | 31,609                | 147             | 639                   | 1,007            | 4,378                 | 6,116           | 26,591                |
| 1964                | 7,720                    | 33,076                | 165             | 707                   | 1,040            | 4,456                 | 6,515           | 27,913                |
| 1965                | 7,740                    | 32,548                | 186             | 782                   | 1,038            | 4,365                 | 6,516           | 27,401                |
| 1966                | 8,332                    | 34,064                | 173             | 707                   | 1,039            | 4,248                 | 7,120           | 29,109                |
| 1967                | 8,365                    | 33,181                | 202             | 801                   | 1,066            | 4,228                 | 7,097           | 28,152                |
| 1968                | 8,560                    | 32,548                | 180             | 684                   | 1,043            | 3,966                 | 7,337           | 27,897                |
| 1969                | 8,451                    | 30,631                | 160             | 580                   | 1,015            | 3,679                 | 7,276           | 26,372                |
| 1970                | 7,779                    | 26,769                | 158             | 544                   | 1,049            | 3,610                 | 6,572           | 22,615                |
| 1971                | 7,666                    | 25,118                | 134             | 439                   | 974              | 3,191                 | 6,558           | 21,488                |
| 1972                | 8,017                    | 25,195                | 130             | 409                   | 952              | 2,992                 | 6,935           | 21,794                |
| 1973                | 8,145                    | 24,241                | 132             | 393                   | 993              | 2,955                 | 7,020           | 20,893                |
| 1974                | 8,220                    | 22,447                | 163             | 445                   | 1,025            | 2,799                 | 7,032           | 19,203                |
| 1975                | 8,605                    | 21,496                | 157             | 392                   | 1,130            | 2,823                 | 7,318           | 18,281                |
| 1976                | 9,561                    | 22,603                | 185             | 437                   | 1,200            | 2,837                 | 8,176           | 19,329                |
| 1977                | 10,485                   | 23,290                | 210             | 466                   | 1,325            | 2,943                 | 8,950           | 19,880                |
| 1978 <sup>1</sup>   | 11,189                   | 23,199                | 250             | 518                   | 1,430            | 2,965                 | 9,509           | 19,716                |
| 1979                | 12,518                   | 23,958                | 265             | 507                   | 1,555            | 2,976                 | 10,698          | 20,475                |
| 1980 <sup>1</sup>   | 14,029                   | 24,595                | 290             | 508                   | 1,900            | 3,331                 | 11,839          | 20,756                |
| 1981                | 16,382                   | 26,266                | 301             | 483                   | 2,340            | 3,752                 | 13,741          | 22,031                |
| 1982 <sup>1</sup>   | 18,545                   | 27,992                | 381             | 575                   | 2,960            | 4,468                 | 15,204          | 22,949                |
| 1983                | 20,680                   | 30,023                | 463             | 672                   | 3,641            | 5,286                 | 16,576          | 24,065                |
| 1984                | 23,396                   | 32,749                | 476             | 666                   | 4,224            | 5,913                 | 18,696          | 26,170                |
| 1985                | 27,196                   | 36,906                | 489             | 664                   | 5,347            | 7,256                 | 21,360          | 28,986                |
| 1986 <sup>2</sup>   | 27,891                   | 37,035                | 551             | 732                   | 4,678            | 6,212                 | 22,662          | 30,092                |
| 1987 <sup>2</sup>   | 30,752                   | 39,639                | 740             | 954                   | 4,660            | 6,007                 | 25,352          | 32,679                |
| 1988 <sup>2,3</sup> | 30,343                   | 37,829                | 993             | 1,238                 | 4,217            | 5,257                 | 25,133          | 31,334                |
| 1989 <sup>2,3</sup> | 28,554                   | 34,291                | 1,384           | 1,662                 | 4,698            | 5,642                 | 22,472          | 26,987                |
| 1990 <sup>2,3</sup> | 28,125                   | 32,511                | 1,368           | 1,581                 | 6,353            | 7,344                 | 20,404          | 23,586                |
| 1991 <sup>2,3</sup> | 26,372                   | 29,413                | 1,712           | 1,909                 | 6,021            | 6,715                 | 18,639          | 20,789                |
| 1992 <sup>2,4</sup> | 24,722                   | 26,919                | 1,186           | 1,291                 | 4,983            | 5,426                 | 18,555          | 20,204                |
| 1993 <sup>2,4</sup> | 22,809                   | 24,252                | 958             | 1,019                 | 4,730            | 5,029                 | 17,118          | 18,201                |
| 1994 <sup>2,4</sup> | 22,463                   | 23,397                | 939             | 978                   | 4,119            | 4,290                 | 17,405          | 18,128                |

See explanatory information and SOURCE at end of table.

Table A-26. Trends in Federal funds for performance of industrial basic research, applied research, and development in the U.S., in current and in constant dollars: 1953-2001

Page 2 of 2

| Year                    | Total                    |                       | Basic research  |                       | Applied research |                       | Development     |                       |
|-------------------------|--------------------------|-----------------------|-----------------|-----------------------|------------------|-----------------------|-----------------|-----------------------|
|                         | Current dollars          | Constant 1996 dollars | Current dollars | Constant 1996 dollars | Current dollars  | Constant 1996 dollars | Current dollars | Constant 1996 dollars |
|                         | [In millions of dollars] |                       |                 |                       |                  |                       |                 |                       |
| 1995 <sup>2,4</sup>     | 23,451                   | 23,905                | 720             | 734                   | 3,699            | 3,771                 | 19,031          | 19,400                |
| 1996 <sup>2,4</sup>     | 23,653                   | 23,653                | 1,358           | 1,358                 | 3,871            | 3,871                 | 18,423 (S)      | 18,423                |
| 1997 <sup>2,4</sup>     | 23,928                   | 23,470                | 1,654           | 1,622                 | 2,861            | 2,806                 | 19,412          | 19,041                |
| 1998 <sup>2,4,5</sup>   | 24,164                   | 23,415                | 1,570           | 1,521                 | 2,862            | 2,773                 | 19,730          | 19,118                |
| 1999 <sup>2,4,5</sup>   | 22,535                   | 21,534                | 1,755           | 1,677                 | 3,383            | 3,233                 | 17,397          | 16,624                |
| 2000 <sup>2,4,5</sup>   | 19,118                   | 17,886                | 1,472           | 3,043                 | 2,951            | 2,761                 | 14,695          | 13,748                |
| 2001 <sup>2,4,5,6</sup> | 16,899                   | 15,444                | 754             | 689                   | 3,603            | 3,293                 | 12,542          | 11,462                |

<sup>1</sup> Character-of-work estimates were made by the National Science Foundation. See National Science Foundation, *National Patterns of R&D Resources: 1996* (NSF 99-335).

<sup>2</sup> The character-of-work estimation procedure was revised for 1986 and later years and resulting statistics are not directly comparable with earlier years. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

<sup>3</sup> As a result of a new sample design, statistics for 1988-91 were revised after they were originally published and are not directly comparable with statistics for earlier years. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

<sup>4</sup> As a result of annual sampling, implemented to produce statistics that better reflect R&D performance among firms in nonmanufacturing industries and small firms in all industries, statistics for 1992 and later years are not directly comparable with statistics for earlier years. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

<sup>5</sup> Using data collected during recent cycles of the survey, NSF investigated a potential reporting anomaly for basic research and found that several large companies, known to develop and manufacture products, reported all R&D as basic research. This phenomenon prompted a renewed effort to strengthen character of work estimates produced from the survey. Consequently, improved edit checks were applied during statistical processing to produce the 2001 basic research, applied research, and development estimates. Also, estimates for 1998, 1999, and 2000 were recalculated.

<sup>6</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

NOTE: Gross domestic product (GDP) implicit price deflators were used to convert current dollars to constant (1996) dollars.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-27. Funds for performance of and number of companies that performed industrial basic research, applied research, and development in the U.S., by industry and size of company, by source of funds: 2001

Page 1 of 1

| Industry and size of company                                     | NAICS codes                               | Total                            |                          |                      |         | Basic research                   |                          |                      |         |
|--|---|----------------------------------|--------------------------|----------------------|---------|----------------------------------|--------------------------|----------------------|---------|
|  |   | Number of companies <sup>1</sup> | Total <sup>2</sup>       | Federal <sup>2</sup> | Company | Number of companies <sup>1</sup> | Total <sup>2</sup>       | Federal <sup>2</sup> | Company |
|  |   |                                  | [In millions of dollars] |                      |         |                                  | [In millions of dollars] |                      |         |
| Distribution by industry:  |   |                                  |                          |                      |         |                                  |                          |                      |         |
| All industries   | 21-23, 31-33, 42, 44-81                   | 33,263                           | 198,505                  | 16,899               | 181,606 | 5,606                            | 7,911                    | 754                  | 7,157   |
| Manufacturing  | 31-33                                     | 16,817                           | 120,705                  | 11,484               | 109,221 | 2,744                            | 4,191                    | 249                  | 3,942   |
| Food   | 311                                       | 969                              | 1,819                    | 0                    | 1,818   | 256                              | 111                      | 0                    | 111     |
| Beverage and tobacco products                                    | 312                                       | 12                               | 152                      | 0                    | 152     | 1                                | (D)                      | 0                    | (D)     |
| Textiles, apparel, and leather                                   | 313-16                                    | 514                              | (D)                      | (D)                  | 255     | 62                               | 26                       | 0                    | 26      |
| Wood products  | 321                                       | 177                              | 182                      | 0                    | 181     | 5                                | 2                        | 0                    | 2       |
| Paper, printing and support activities                           | 322, 323                                  | 495                              | (D)                      | (D)                  | 2,664   | 155                              | 42                       | 3                    | 39      |
| Petroleum and coal products                                      | 324                                       | 27                               | (D)                      | (D)                  | 1,057   | 16                               | 15                       | 0                    | 15      |
| Chemicals  | 325                                       | 1,877                            | 17,892                   | 180                  | 17,713  | 369                              | (D)                      | (D)                  | 1,639   |
| Basic chemicals  | 3251                                      | 523                              | 1,876                    | 42                   | 1,835   | 226                              | (D)                      | (D)                  | 191     |
| Resin, synthetic rubber, fibers, and filament                    | 3252                                      | 66                               | (D)                      | (D)                  | 2,745   | 12                               | 215                      | 0                    | 215     |
| Pharmaceuticals and medicines                                    | 3254                                      | 347                              | 10,137                   | 0                    | 10,137  | 9                                | 1,068                    | 0                    | 1,068   |
| Other chemicals  | 325 minus (3251-52, 3254)                 | 941                              | (D)                      | (D)                  | 2,996   | 122                              | (D)                      | (D)                  | 166     |
| Plastics and rubber products                                     | 326                                       | 811                              | (D)                      | (D)                  | 2,245   | 38                               | 64                       | 0                    | 64      |
| Nonmetallic mineral products                                     | 327                                       | 464                              | 990                      | 11                   | 978     | 98                               | 196                      | (D)                  | (D)     |
| Primary metals   | 331                                       | 427                              | 485                      | 6                    | 479     | 110                              | 20                       | 0                    | 20      |
| Fabricated metal products  | 332                                       | 1,393                            | 1,599                    | 54                   | 1,545   | 201                              | 35                       | 0                    | 35      |
| Machinery  | 333                                       | 2,489                            | 6,404                    | 67                   | 6,337   | 390                              | 90                       | 0                    | 90      |
| Computer and electronic products                                 | 334                                       | 3,230                            | 47,079                   | 5,848                | 41,232  | 308                              | (D)                      | (D)                  | 860     |
| Computers and peripheral equipment                               | 3341                                      | 238                              | (D)                      | (D)                  | 3,165   | 3                                | 4                        | 0                    | 4       |
| Communications equipment   | 3342                                      | 580                              | 15,507                   | 298                  | 15,209  | 22                               | (D)                      | (D)                  | 201 (S) |
| Semiconductor and other electronic components                    | 3344                                      | 735                              | 14,358                   | 148                  | 14,210  | 159                              | 283                      | 0                    | 283     |
| Navigational, measuring, electromedical, and control instruments | 3345                                      | 1,538                            | 12,947                   | 5,382                | 7,565   | 119                              | (D)                      | (D)                  | 357     |
| Other computer and electronic products                           | 334 minus (3341-42, 3344-45)              | 139                              | (D)                      | (D)                  | 1,083   | 4                                | 14                       | 0                    | 14      |
| Electrical equipment, appliances, and components                 | 335                                       | 1,012                            | 4,980                    | 301 (S)              | 4,680   | 61                               | 79                       | 24                   | 56 (S)  |
| Transportation equipment   | 336                                       | 1,015                            | 25,965                   | 4,961                | 21,004  | 413                              | (D)                      | (D)                  | 710     |
| Motor vehicles, trailers, and parts                              | 3361-63                                   | 648                              | (D)                      | (D)                  | 16,089  | 358                              | (D)                      | (D)                  | 398     |
| Aerospace products and parts                                     | 3364                                      | 115                              | 7,868                    | 3,785                | 4,083   | 51                               | (D)                      | (D)                  | 301     |
| Other transportation equipment                                   | 336 minus (3361-64)                       | 252                              | (D)                      | (D)                  | 832 (S) | 5                                | 11                       | 0                    | 11      |
| Furniture and related products                                   | 337                                       | 324                              | 301                      | 0                    | 301     | 30                               | 4                        | 0                    | 4       |
| Miscellaneous manufacturing                                      | 339                                       | 1,580                            | 6,606                    | 25                   | 6,581   | 232                              | 78                       | 1                    | 77      |
| Medical equipment and supplies                                   | 3391                                      | 737                              | (D)                      | (D)                  | 5,903   | 120                              | 64                       | 1                    | 63      |
| Other miscellaneous manufacturing                                | 339 minus (3391)                          | 843                              | (D)                      | (D)                  | 678     | 112                              | 14                       | 0                    | 14      |
| Other manufacturing  | 31-33 minus (311-16, 321-27, 331-37, 339) | --                               | --                       | --                   | --      | --                               | --                       | --                   | --      |

See explanatory information and SOURCE at end of table.

Table A-27. Funds for performance of and number of companies that performed industrial basic research, applied research, and development in the U.S., by industry and size of company, by source of funds: 2001

Page 2 of 3

| Industry and size of company                           | NAICS codes                 | Total                            |                          |                      |         | Basic research                   |                          |                      |         |
|--|-----------------------------|----------------------------------|--------------------------|----------------------|---------|----------------------------------|--------------------------|----------------------|---------|
|  |                             | Number of companies <sup>1</sup> | Total <sup>2</sup>       | Federal <sup>2</sup> | Company | Number of companies <sup>1</sup> | Total <sup>2</sup>       | Federal <sup>2</sup> | Company |
|  |                             |                                  | [In millions of dollars] |                      |         |                                  | [In millions of dollars] |                      |         |
| Distribution by industry:                              |                             |                                  |                          |                      |         |                                  |                          |                      |         |
| Nonmanufacturing                                       | 21-23, 42, 44-81            | 16,446                           | 77,799                   | 5,415                | 72,384  | 2,862                            | 3,721                    | 506                  | 3,215   |
| Mining, extraction, and support activities             | 21                          | 68                               | (D)                      | (D)                  | 846     | 6                                | 15                       | 0                    | 15      |
| Utilities  | 22                          | 85                               | 133                      | 19                   | 114     | 3                                | 0                        | 0                    | 0       |
| Construction   | 23                          | 399                              | 320                      | 1                    | 320     | 100                              | 29                       | 0                    | 29      |
| Trade  | 42, 44, 45                  | 4,735                            | 24,372                   | 88                   | 24,284  | 1,117                            | (D)                      | (D)                  | 703     |
| Transportation and warehousing                         | 48, 49                      | 362                              | 1,848                    | 72                   | 1,776   | 2                                | (D)                      | 0                    | (D)     |
| Information  | 51                          | 1,850                            | (D)                      | (D)                  | 17,259  | 517                              | (D)                      | (D)                  | 280     |
| Publishing   | 511                         | 1,279                            | 13,760                   | 44                   | 13,716  | 262                              | (D)                      | (D)                  | 187     |
| Newspaper, periodical, book, and database              | 5111                        | 152                              | 649                      | 0                    | 649     | 0                                | 0                        | 0                    | 0       |
| Software   | 5112                        | 1,127                            | 13,111                   | 44                   | 13,067  | 262                              | (D)                      | (D)                  | 187     |
| Broadcasting and telecommunications                    | 513                         | 361                              | (D)                      | (D)                  | 1,270   | 252                              | (D)                      | 0                    | (D)     |
| Radio and television broadcasting                      | 5131                        | 51                               | (D)                      | 0                    | (D)     | 0                                | 0                        | 0                    | 0       |
| Telecommunications                                     | 5133                        | 310                              | (D)                      | (D)                  | 1,101   | 252                              | (D)                      | 0                    | (D)     |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)      | 1                                | (D)                      | 0                    | (D)     | 0                                | 0                        | 0                    | 0       |
| Other information                                      | 51 minus (511, 513)         | 209                              | (D)                      | (D)                  | 2,273   | 3                                | (D)                      | 0                    | (D)     |
| Finance, insurance, and real estate                    | 52, 53                      | 338                              | (D)                      | (D)                  | 2,424   | 11                               | (D)                      | (D)                  | 9       |
| Professional, scientific, and technical services       | 54                          | 5,840                            | 27,704                   | 5,065                | 22,640  | 781                              | 1,588                    | 440                  | 1,148   |
| Architectural, engineering, and related services       | 5413                        | 938                              | 3,386                    | 1,021                | 2,365   | 47                               | (D)                      | (D)                  | 49      |
| Computer systems design and related services           | 5415                        | 2,516                            | 9,154                    | 498                  | 8,656   | 200                              | (D)                      | (D)                  | 181     |
| Scientific R&D services                                | 5417                        | 1,576                            | 14,244                   | 3,352                | 10,893  | 438                              | 1,246                    | 382                  | 864     |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417) | 811                              | 920                      | 194                  | 726     | 97                               | 54                       | 0                    | 54      |
| Management of companies and enterprises                | 55                          | 375                              | 381                      | 0                    | 381     | 1                                | (D)                      | 0                    | (D)     |
| Health care services                                   | 621-23                      | 1,294                            | 1,149                    | 29                   | 1,120   | 53                               | (D)                      | (D)                  | 659     |
| Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81     | 1,099                            | 1,259                    | 38                   | 1,221   | 271                              | 74                       | 21                   | 53      |

See explanatory information and SOURCE at end of table.

Table A-27. Funds for performance of and number of companies that performed industrial basic research, applied research, and development in the U.S., by industry and size of company, by source of funds: 2001

Page 8 of 8

| Industry and size of company                              |  | Total                            |                          |                      |         | Basic research                   |                          |                      |         |
|---|--|----------------------------------|--------------------------|----------------------|---------|----------------------------------|--------------------------|----------------------|---------|
|   |  | Number of companies <sup>1</sup> | Total <sup>2</sup>       | Federal <sup>2</sup> | Company | Number of companies <sup>1</sup> | Total <sup>2</sup>       | Federal <sup>2</sup> | Company |
|   |  |                                  | [In millions of dollars] |                      |         |                                  | [In millions of dollars] |                      |         |
| Distribution by size of company:<br>[Number of employees] |  |                                  |                          |                      |         |                                  |                          |                      |         |
| Total   |  | 33,263                           | 198,505                  | 16,899               | 181,606 | 5,606                            | 7,911                    | 754                  | 7,157   |
| 5 to 24   |  | 14,681                           | 4,828                    | 653                  | 4,175   | 3,063                            | 259                      | 27                   | 232     |
| 25 to 49  |  | 5,036                            | 3,750                    | 201                  | 3,548   | 919                              | 230                      | 21                   | 209     |
| 50 to 99  |  | 5,030                            | 8,202                    | 548                  | 7,654   | 468                              | 787                      | 51                   | 736     |
| 100 to 249  |  | 4,261                            | 12,916                   | 903                  | 12,012  | 559                              | 515                      | 148                  | 367     |
| 250 to 499  |  | 1,504                            | 8,702                    | 560                  | 8,143   | 150                              | 522                      | 52                   | 470     |
| 500 to 999  |  | 1,194                            | 10,564                   | 627                  | 9,936   | 224                              | (D)                      | (D)                  | 569     |
| 1,000 to 4,999  |  | 1,039                            | 26,748                   | 608                  | 26,140  | 135                              | (D)                      | (D)                  | 1,037   |
| 5,000 to 9,999  |  | 244                              | 17,487                   | 1,651                | 15,836  | 38                               | 379                      | 14                   | 365     |
| 10,000 to 24,999  |  | 156                              | 27,065                   | 904                  | 26,161  | 25                               | (D)                      | (D)                  | 1,138   |
| 25,000 or more  |  | 118                              | 78,244                   | 10,243               | 68,001  | 26                               | 2,321                    | 288                  | 2,033   |

See explanatory information and SOURCE at end of table.



Table A-27. Funds for performance of and number of companies that performed industrial basic research, applied research, and development in the U.S., by industry and size of company, by source of funds: 2001

Page 1 of 6

| Industry and size of company                                     | NAICS codes                               | Applied research                 |                          |                      |         | Development                      |                          |                      |           |
|--|---|----------------------------------|--------------------------|----------------------|---------|----------------------------------|--------------------------|----------------------|-----------|
|  |   | Number of companies <sup>1</sup> | Total <sup>2</sup>       | Federal <sup>2</sup> | Company | Number of companies <sup>1</sup> | Total <sup>2</sup>       | Federal <sup>2</sup> | Company   |
|  |   |                                  | [In millions of dollars] |                      |         |                                  | [In millions of dollars] |                      |           |
| Distribution by industry:  |   |                                  |                          |                      |         |                                  |                          |                      |           |
| All Industries   | 21-23, 31-33, 42, 44-81                   | 10,138                           | 43,486                   | 3,603                | 39,883  | 21,397                           | 147,108                  | 12,542               | 134,566   |
| Manufacturing  | 31-33                                     | 4,946                            | 26,438                   | 1,065                | 25,373  | 12,191                           | 90,076                   | 10,169               | 79,907    |
| Food   | 311                                       | 326                              | 415                      | 0                    | 415     | 660                              | 1,293                    | 0                    | 1,293     |
| Beverage and tobacco products                                    | 312                                       | 5                                | 30                       | 0                    | 30      | 9                                | (D)                      | 0                    | (D)       |
| Textiles, apparel, and leather                                   | 313-16                                    | 76                               | 36                       | 0                    | 36      | 333                              | (D)                      | (D)                  | 193       |
| Wood products  | 321                                       | 69                               | 57                       | 0                    | 57      | 70                               | 123                      | 0                    | 123       |
| Paper, printing and support activities                           | 322, 323                                  | 111                              | 761                      | 14                   | 747     | 368                              | (D)                      | (D)                  | 1,878     |
| Petroleum and coal products                                      | 324                                       | 21                               | 493                      | 1                    | 492     | 17                               | (D)                      | (D)                  | 550       |
| Chemicals  | 325                                       | 873                              | (D)                      | (D)                  | 4,814   | 1,470                            | 11,378                   | 119                  | 11,259    |
| Basic chemicals  | 3251                                      | 244                              | (D)                      | (D)                  | 552     | 391                              | (D)                      | (D)                  | 1,091     |
| Resin, synthetic rubber, fibers, and filament                    | 3252                                      | 61                               | (D)                      | (D)                  | 1,149   | 63                               | (D)                      | (D)                  | 1,381     |
| Pharmaceuticals and medicines                                    | 3254                                      | 133                              | 2,329                    | 0                    | 2,329   | 240                              | 6,740                    | 0                    | 6,740     |
| Other chemicals  | 325 minus (3251-52, 3254)                 | 434                              | (D)                      | (D)                  | 784     | 776                              | (D)                      | (D)                  | 2,047     |
| Plastics and rubber products                                     | 326                                       | 135                              | (D)                      | (D)                  | 174     | 453                              | 2,006                    | 0                    | 2,006     |
| Nonmetallic mineral products                                     | 327                                       | 413                              | 556                      | 6                    | 550     | 360                              | 238                      | (D)                  | (D)       |
| Primary metals   | 331                                       | 230                              | (D)                      | (D)                  | 194     | 218                              | (D)                      | (D)                  | 265       |
| Fabricated metal products  | 332                                       | 268                              | 265                      | 0                    | 265     | 1,129                            | 1,299                    | 54                   | 1,245     |
| Machinery  | 333                                       | 620                              | (D)                      | (D)                  | 1,121   | 1,811                            | (D)                      | (D)                  | 5,125     |
| Computer and electronic products                                 | 334                                       | 1,006                            | 10,284                   | 160                  | 10,124  | 2,682                            | (D)                      | (D)                  | 30,250    |
| Computers and peripheral equipment                               | 3341                                      | 33                               | (D)                      | (D)                  | 877 (S) | 195                              | (D)                      | (D)                  | 2,284     |
| Communications equipment   | 3342                                      | 168                              | (D)                      | (D)                  | 2,617   | 427                              | 12,630                   | 239                  | 12,391    |
| Semiconductor and other electronic components                    | 3344                                      | 280                              | 5,157                    | 0                    | 5,157   | 664                              | 8,918                    | 148                  | 8,770     |
| Navigational, measuring, electromedical, and control instruments | 3345                                      | 515                              | 1,505                    | 111                  | 1,394   | 1,313                            | (D)                      | (D)                  | 5,815     |
| Other computer and electronic products                           | 334 minus (3341-42, 3344-45)              | 10                               | 79                       | 0                    | 79      | 83                               | (D)                      | (D)                  | 990       |
| Electrical equipment, appliances, and components                 | 335                                       | 123                              | (D)                      | (D)                  | 703     | 383                              | (D)                      | (D)                  | 3,920 (S) |
| Transportation equipment   | 336                                       | 214                              | 5,855                    | 748                  | 5,107   | 940                              | (D)                      | (D)                  | 15,187    |
| Motor vehicles, trailers, and parts                              | 3361-63                                   | 72                               | 4,135                    | 13                   | 4,122   | 586                              | (D)                      | (D)                  | 11,569    |
| Aerospace products and parts                                     | 3364                                      | 103                              | 1,639                    | 735                  | 904     | 106                              | (D)                      | (D)                  | 2,877     |
| Other transportation equipment                                   | 336 minus (3361-64)                       | 40                               | 80                       | 0                    | 80      | 248                              | (D)                      | (D)                  | 741       |
| Furniture and related products                                   | 337                                       | 20                               | 9                        | 0                    | 9       | 312                              | 289                      | 0                    | 289       |
| Miscellaneous manufacturing                                      | 339                                       | 435                              | (D)                      | (D)                  | 535     | 975                              | (D)                      | (D)                  | 5,970     |
| Medical equipment and supplies                                   | 3391                                      | 168                              | (D)                      | (D)                  | 433     | 578                              | (D)                      | (D)                  | 5,408     |
| Other miscellaneous manufacturing                                | 339 minus (3391)                          | 267                              | (D)                      | (D)                  | 103     | 397                              | (D)                      | (D)                  | 562       |
| Other manufacturing  | 31-33 minus (311-16, 321-27, 331-37, 339) | --                               | --                       | --                   | --      | --                               | --                       | --                   | --        |

See explanatory information and SOURCE at end of table.

Table A-27. Funds for performance of and number of companies that performed industrial basic research, applied research, and development in the U.S., by industry and size of company, by source of funds: 2001

Page 3 of 4

| Industry and size of company                           | NAICS codes                 | Applied research                 |                          |                      |           | Development                      |                          |                      |         |
|--|-----------------------------|----------------------------------|--------------------------|----------------------|-----------|----------------------------------|--------------------------|----------------------|---------|
|  |                             | Number of companies <sup>1</sup> | Total <sup>2</sup>       | Federal <sup>2</sup> | Company   | Number of companies <sup>1</sup> | Total <sup>2</sup>       | Federal <sup>2</sup> | Company |
|  |                             |                                  | [In millions of dollars] |                      |           |                                  | [In millions of dollars] |                      |         |
| Distribution by industry:                              |                             |                                  |                          |                      |           |                                  |                          |                      |         |
| Nonmanufacturing                                       | 21-23, 42, 44-81            | 5,193                            | 17,048                   | 2,536                | 14,512    | 9,207                            | 57,032                   | 2,373                | 54,659  |
| Mining, extraction, and support activities             | 21                          | 62                               | (D)                      | (D)                  | 171       | 65                               | (D)                      | (D)                  | 661     |
| Utilities  | 22                          | 63                               | (D)                      | (D)                  | 22        | 32                               | (D)                      | (D)                  | 92      |
| Construction   | 23                          | 66                               | 129                      | 0                    | 129       | 191                              | 162                      | 0                    | 162     |
| Trade  | 42, 44, 45                  | 1,548                            | 2,890                    | 35                   | 2,854     | 2,326                            | (D)                      | (D)                  | 20,726  |
| Transportation and warehousing                         | 48, 49                      | 55                               | (D)                      | (D)                  | 404       | 109                              | (D)                      | (D)                  | (D)     |
| Information  | 51                          | 677                              | (D)                      | (D)                  | 2,356     | 1,567                            | 14,709                   | 85                   | 14,624  |
| Publishing   | 511                         | 414                              | (D)                      | (D)                  | 1,975     | 1,156                            | 11,594                   | 39                   | 11,555  |
| Newspaper, periodical, book, and database              | 5111                        | 5                                | 311                      | 0                    | 311       | 145                              | 338                      | 0                    | 338     |
| Software   | 5112                        | 409                              | (D)                      | (D)                  | 1,664     | 1,011                            | 11,256                   | 39                   | 11,217  |
| Broadcasting and telecommunications                    | 513                         | 255                              | 120                      | 0                    | 120       | 309                              | (D)                      | (D)                  | (D)     |
| Radio and television broadcasting                      | 5131                        | 0                                | 0                        | 0                    | 0         | 1                                | (D)                      | 0                    | (D)     |
| Telecommunications                                     | 5133                        | 255                              | 120                      | 0                    | 120       | 307                              | (D)                      | (D)                  | (D)     |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)      | 0                                | 0                        | 0                    | 0         | 1                                | (D)                      | 0                    | (D)     |
| Other information                                      | 51 minus (511, 513)         | 8                                | 261                      | 0                    | 261       | 102                              | (D)                      | (D)                  | (D)     |
| Finance, insurance, and real estate                    | 52, 53                      | 15                               | 72                       | 6                    | 66        | 321                              | 2,356                    | 7                    | 2,349   |
| Professional, scientific, and technical services       | 54                          | 2,189                            | 9,970                    | 2,423                | 7,547     | 3,829                            | 16,146                   | 2,202                | 13,944  |
| Architectural, engineering, and related services       | 5413                        | 443                              | 1,086                    | 363                  | 723       | 671                              | (D)                      | (D)                  | 1,593   |
| Computer systems design and related services           | 5415                        | 641                              | 2,839 (S)                | 92                   | 2,746 (S) | 1,833                            | (D)                      | (D)                  | 5,729   |
| Scientific R&D services                                | 5417                        | 745                              | 5,716                    | 1,773                | 3,943     | 979                              | 7,282                    | 1,197                | 6,085   |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417) | 359                              | 330                      | 194                  | 136       | 346                              | 537                      | 0                    | 537     |
| Management of companies and enterprises                | 55                          | 50                               | 89                       | 0                    | 89        | 73                               | (D)                      | 0                    | (D)     |
| Health care services                                   | 621-23                      | 133                              | 378                      | 27                   | 351       | 162                              | (D)                      | (D)                  | 110     |
| Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81     | 336                              | 525                      | 3                    | 522       | 531                              | 661                      | 14                   | 646     |

See explanatory information and SOURCE at end of table.

Table A-27. Funds for performance of and number of companies that performed industrial basic research, applied research, and development in the U.S., by industry and size of company, by source of funds: 2001

Page 3 of 4

| Industry and size of company                              |  | Applied research                 |                          |                      |         | Development                      |                          |                      |         |
|---|--|----------------------------------|--------------------------|----------------------|---------|----------------------------------|--------------------------|----------------------|---------|
|   |  | Number of companies <sup>1</sup> | Total <sup>2</sup>       | Federal <sup>2</sup> | Company | Number of companies <sup>1</sup> | Total <sup>2</sup>       | Federal <sup>2</sup> | Company |
|   |  |                                  | [In millions of dollars] |                      |         |                                  | [In millions of dollars] |                      |         |
| Distribution by size of company:<br>[Number of employees] |  |                                  |                          |                      |         |                                  |                          |                      |         |
| Total   |  | 10,138                           | 43,486                   | 3,603                | 39,883  | 21,397                           | 147,108                  | 12,542               | 134,566 |
| 5 to 24   |  | 4,395                            | 1,856                    | 321                  | 1,535   | 8,551                            | 2,713                    | 305                  | 2,408   |
| 25 to 49  |  | 1,746                            | (D)                      | (D)                  | 979     | 3,683                            | (D)                      | (D)                  | 2,360   |
| 50 to 99  |  | 1,233                            | 1,883                    | 190                  | 1,692   | 3,444                            | 5,532                    | 307                  | 5,225   |
| 100 to 249  |  | 1,293                            | 3,165                    | 167                  | 2,998   | 2,884                            | 9,236                    | 588                  | 8,648   |
| 250 to 499  |  | 460                              | 1,962                    | 247                  | 1,715   | 947                              | 6,218                    | 261                  | 5,957   |
| 500 to 999  |  | 405                              | 2,387                    | 229                  | 2,158   | 829                              | (D)                      | (D)                  | 7,210   |
| 1,000 to 4,999  |  | 413                              | 5,718                    | 204                  | 5,514   | 718                              | (D)                      | (D)                  | 19,589  |
| 5,000 to 9,999  |  | 83                               | 5,236                    | 1,233                | 4,003   | 158                              | 11,872                   | 403                  | 11,469  |
| 10,000 to 24,999  |  | 57                               | (D)                      | (D)                  | 6,969   | 96                               | 18,947                   | 893                  | 18,054  |
| 25,000 or more  |  | 53                               | 13,210                   | 890 (S)              | 12,320  | 87                               | 62,712                   | 9,066                | 53,647  |

<sup>1</sup> The estimates in the "number of companies" columns are the numbers of companies that actually distributed total R&D among the three character-of-work categories (basic research, applied research, and development) when responding to the survey. During subsequent statistical processing, when undistributed amounts of R&D were allocated among the three categories for this table, it was not possible to similarly allocate the associated number of companies among the three categories. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm> and Table B-7 for the amount of undistributed R&D and the number of companies that reported undistributed R&D.

<sup>2</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.  
(S) = Indicates imputation of more than 50 percent.  
(-) = Indicates data not collected.

NOTE: The company R&D in this table is the industrial R&D performed within company facilities funded from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and State governments. Excluded from this table are company-funded R&D not performed within the company (e.g., R&D contracted out to other organizations) and company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations).

Starting in 1999, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. Statistics for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-28. Total, Federal, company and other funds for industrial energy R&D performance in the U.S. and number of companies that performed energy R&D in the U.S., by selected industry and size of company: 2001 and projected 2002

| Companies that performed energy R&D in the U.S., by selected industry and size of company: 2001 and projected 2002 |                         |                     |                          |         |         |                          |         |         |
|--|-------------------------|---------------------|--------------------------|---------|---------|--------------------------|---------|---------|
| Industry and size of company   | NAICS codes             | Number of companies | 2001 <sup>1</sup>        |         |         | Projected 2002           |         |         |
|  |                         |                     | Total                    | Federal | Company | Total                    | Federal | Company |
|  |                         |                     | [In millions of dollars] |         |         | [In millions of dollars] |         |         |
| Distribution by industry:  |                         |                     |                          |         |         |                          |         |         |
| All industries   | 21-23, 31-33, 42, 44-81 | 52                  | 1,381                    | 78      | 1,302   | 1,370                    | 103     | 1,268   |
| Manufacturing  | 31-33                   | 31                  | 973                      | 39 (S)  | 934     | 1,001                    | 78      | 923     |
| Petroleum and coal products  | 324                     | 3                   | (D)                      | (D)     | 286     | (D)                      | (D)     | 307     |
| Chemicals  | 325                     | 4                   | (D)                      | (D)     | 7       | (D)                      | (D)     | 9       |
| Machinery  | 333                     | 4                   | 31                       | 0       | 31      | (D)                      | (D)     | 24      |
| Computer and electronic products   | 334                     | 4                   | (D)                      | (D)     | 147     | 125                      | 0       | 125     |
| Electrical equipment, appliances, and components   | 335                     | 4                   | (D)                      | (D)     | 218     | (D)                      | (D)     | 220     |
| Transportation equipment   | 336                     | 3                   | (D)                      | (D)     | 223     | (D)                      | (D)     | 205     |
| All other manufacturing  | --                      | 9                   | 21                       | 0       | 21      | 33                       | 0       | 33      |
| Nonmanufacturing   | 21-23, 42, 44-81        | 21                  | 408                      | 39      | 369     | 370                      | 25      | 345     |
| Mining, extraction, and support activities   | 21                      | 5                   | (D)                      | (D)     | 268     | (D)                      | (D)     | 288     |
| All other nonmanufacturing   | --                      | 16                  | (D)                      | (D)     | 101     | (D)                      | (D)     | 58      |
| Distribution by size of company:<br>[Number of employees]  |                         |                     |                          |         |         |                          |         |         |
| Total  |                         | 52                  | 1,381                    | 78      | 1,302   | 1,370                    | 103     | 1,268   |
| 5 to 24  |                         | 0                   | 0                        | 0       | 0       | 0                        | 0       | 0       |
| 25 to 49   |                         | 1                   | (D)                      | (D)     | (D)     | (D)                      | (D)     | (D)     |
| 50 to 99   |                         | 0                   | 0                        | 0       | 0       | 0                        | 0       | 0       |
| 100 to 249   |                         | 4                   | (D)                      | (D)     | 10      | (D)                      | (D)     | 4       |
| 250 to 499   |                         | 2                   | (D)                      | (D)     | 0       | (D)                      | (D)     | 0       |
| 500 to 999   |                         | 3                   | (D)                      | (D)     | 47      | (D)                      | (D)     | 20      |
| 1,000 to 4,999   |                         | 11                  | (D)                      | (D)     | 66      | (D)                      | (D)     | 53      |
| 5,000 to 9,999   |                         | 11                  | (D)                      | (D)     | 137     | (D)                      | (D)     | 266     |
| 10,000 to 24,999   |                         | 8                   | (D)                      | (D)     | 316     | (D)                      | (D)     | 313     |
| 25,000 or more   |                         | 12                  | 762                      | 44 (S)  | 718     | 647                      | 42 (S)  | 604     |

<sup>1</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

(--) = All NAICS codes other than those specified.

NOTES: Energy R&D data are collected only on Form RD-1, the questionnaire sent to larger R&D-performing companies. Consequently, the universe of companies that performs energy R&D may not be represented by the statistics in this table.

The company R&D in this table is the industrial R&D performed within company facilities funded from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and State governments. Excluded from this table are company-funded R&D not performed within the company (e.g., R&D contracted out to other organizations) and company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations)

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

**Table A-29. Total, Federal, company and other funds for industrial energy R&D performance in the U.S. and number of companies that performed energy R&D in the U.S., by primary energy source: 2001 and projected 2002**

| Primary energy source                                     | Number of companies <sup>2</sup> | 2001 <sup>1</sup>        |         |         | Projected 2002           |         |         |
|---|----------------------------------|--------------------------|---------|---------|--------------------------|---------|---------|
|   |                                  | Total                    | Federal | Company | Total                    | Federal | Company |
|   |                                  | [In millions of dollars] |         |         | [In millions of dollars] |         |         |
| Total   | 52                               | 1,381                    | 78      | 1,302   | 1,370                    | 103     | 1,268   |
| Fossil fuels  | 25                               | 771                      | 44      | 726     | 783                      | 33      | 750     |
| Nuclear   | 5                                | (D)                      | (D)     | 23      | (D)                      | 0       | (D)     |
| Total geothermal, solar, and conservation and utilization | 19                               | 254                      | 18      | 236     | (D)                      | (D)     | 230     |
| All other energy  | 25                               | (D)                      | (D)     | 212     | 173                      | (D)     | (D)     |

<sup>1</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs)

<sup>2</sup> Detail does not add to total because categories are not mutually exclusive.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

NOTES: Energy R&D data are collected only on Form RD-1, the survey form sent to larger R&D-performing companies. Consequently, the universe of companies that performs energy R&D may not be represented by the statistics in this table.

The company R&D in this table is the industrial R&D performed within company facilities funded from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and State governments. Excluded from this table are company-funded R&D not performed within the company (e.g., R&D contracted out to other organizations) and company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations).

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-30. Total (Federal plus company and other) funds for industrial R&amp;D performance in the U.S., by state in selected years: 1983-2001

| State                | 1983                     | 1985   | 1987   | 1989 <sup>1</sup> | 1991 <sup>1</sup> | 1993 <sup>2</sup> | 1995 <sup>2</sup> | 1997 <sup>2</sup> | 1998 <sup>2,3,4</sup> | 1999 <sup>2,3,4</sup> | 2000 <sup>2,3,4</sup> | 2001 <sup>2,4,5</sup> |
|----------------------|--------------------------|--------|--------|-------------------|-------------------|-------------------|-------------------|-------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|                      | [In millions of dollars] |        |        |                   |                   |                   |                   |                   |                       |                       |                       |                       |
| United States, total | 65,268                   | 84,239 | 92,155 | 102,055           | 116,952           | 117,400           | 132,103           | 157,539           | 169,180               | 182,711               | 199,539               | 198,505               |
| Alabama              | 187                      | (S)    | 1,523  | 430               | 596               | 557 (S)           | 686               | 589 (S)           | 845                   | 823                   | 821 (S)               | 905                   |
| Alaska               | (T)                      | (D)    | 10     | 9                 | 21                | 14                | 30                | 24 (S)            | 37 (E)                | 82 (E)                | 48 (E)                | 68                    |
| Arizona              | (T)                      | 1,079  | 809    | 921               | 1,080             | 1,039             | 1,356 (S)         | 1,854             | 1,801                 | 2,109 (S)             | 2,182 (S)             | 2,707                 |
| Arkansas             | (T)                      | (D)    | 129    | 51                | (S)               | 179               | 181               | 118               | 213 (E)               | 326                   | 400                   | 254 (E)               |
| California           | (T)                      | (S)    | 18,636 | 23,781            | (S)               | 21,975            | 28,710            | 34,011            | 32,856                | 36,991                | 43,459                | 41,745                |
| Colorado             | 741                      | 988    | 1,207  | 1,167             | (S)               | 1,966             | 1,865             | 2,248             | 3,180                 | 3,266                 | 3,143                 | 3,117                 |
| Connecticut          | 1,682                    | 2,129  | 2,121  | 2,421             | 1,756             | 2,228             | 3,906             | 3,014             | 3,346                 | 4,145 (S)             | 4,132 (S)             | 4,686                 |
| Delaware             | (T)                      | (D)    | (D)    | (D)               | (D)               | 913 (S)           | 1,077 (S)         | 1,009 (S)         | 1,356 (S)             | 1,295 (S)             | 1,468 (S)             | 1,232                 |
| District of Columbia | (T)                      | (D)    | (D)    | (D)               | 46                | 515 (S)           | 672 (S)           | (D)               | 598 (S)               | 268 (E)               | 196 (E)               | 242                   |
| Florida              | (T)                      | 1,973  | 2,041  | 2,352             | (S)               | 2,386             | 4,101             | 3,442             | 3,265                 | 3,482                 | 3,773 (S)             | 3,755                 |
| Georgia              | 348                      | (D)    | 958    | 722               | 993               | 792               | 1,175             | 1,273             | 1,617                 | 1,904                 | 2,159 (S)             | 1,912                 |
| Hawaii               | (T)                      | 13     | 70     | 9                 | 13                | 255               | 14                | 87                | 55 (E)                | 68 (E)                | 93 (E)                | 93                    |
| Idaho                | (T)                      | 451    | 467    | (D)               | (S)               | 686               | 827               | 1,181 (S)         | 1,103 (S)             | 1,239                 | 1,363                 | 884                   |
| Illinois             | 2,291                    | (D)    | 4,099  | 4,068             | 5,750             | 5,023             | 5,776 (S)         | 6,248             | 7,318                 | 8,102                 | 8,393 (S)             | 8,232                 |
| Indiana              | (T)                      | (D)    | 1,860  | 1,823             | 2,274             | 2,141             | 2,721 (S)         | 2,677             | 2,922                 | 2,863 (S)             | 2,888 (S)             | 3,583                 |
| Iowa                 | 287                      | (D)    | 328    | 365               | 527               | 505               | 998               | 578               | 750                   | 730                   | 762                   | 817                   |
| Kansas               | 293                      | (D)    | 1,128  | 406               | (S)               | 280 (S)           | 569               | 1,136 (S)         | 1,384 (S)             | 1,448 (S)             | 1,327 (S)             | 1,299 (S)             |
| Kentucky             | 191                      | (D)    | 238    | 227               | 176               | 282               | 452               | 359               | 606                   | 777                   | 762                   | 636                   |
| Louisiana            | 257                      | (D)    | 128    | 169               | (S)               | 106               | 61                | 172               | 377 (E)               | 516 (E)               | 364 (E)               | 316 (E)               |
| Maine                | (T)                      | (D)    | 39     | 33                | (S)               | (D)               | 286               | 83                | 137                   | 208                   | 255                   | 249                   |
| Maryland             | (T)                      | 1,548  | 1,292  | 1,093             | 1,376             | 1,296             | 1,075             | 1,425             | 1,905                 | 2,020                 | 2,213                 | 3,682                 |
| Massachusetts        | 2,466                    | 4,495  | 5,255  | 5,851             | (S)               | 5,960             | 7,416             | 8,300             | 10,367                | 9,626                 | 10,595                | 11,378                |
| Michigan             | 5,716                    | 6,436  | 7,095  | 8,506             | 9,283             | 18,845            | 12,388            | 13,009            | 12,554                | 16,877                | 17,489 (S)            | 14,283                |
| Minnesota            | 1,814                    | (D)    | 2,145  | 2,075             | 2,070             | 2,341             | 2,636 (S)         | 3,116             | 3,367                 | 3,695                 | 3,971                 | 4,355                 |
| Mississippi          | (T)                      | 62     | 42     | 56                | (S)               | 51                | 66                | 73                | 183 (E)               | 224 (E)               | 242 (E)               | 219 (E)               |
| Missouri             | (T)                      | (D)    | 1,823  | 2,391             | (S)               | 1,339 (S)         | 2,028 (S)         | 1,290 (S)         | 1,505                 | 1,664                 | 1,978                 | 1,792                 |
| Montana              | (T)                      | (D)    | 7      | (D)               | (S)               | (D)               | 17                | 92                | 63                    | 92 (E)                | 78 (E)                | 70 (E)                |
| Nebraska             | 26                       | (D)    | 59     | 64                | 67                | 93                | 150               | 71                | 195 (E)               | 217 (E)               | 335 (E)               | 306                   |
| Nevada               | (T)                      | (S)    | 55     | 29                | 95                | 65                | 322               | 380               | 476                   | 490                   | 433                   | 290                   |
| New Hampshire        | (T)                      | (D)    | 90     | (D)               | (D)               | 247               | 472               | 652               | 1,138                 | 1,157                 | 722                   | 1,339                 |

See explanatory information and SOURCE at end of table.

Table A-30. Total (Federal plus company and other) funds for industrial R&amp;D performance in the U.S., by state in selected years: 1983-2001

| State                            | 1983                     | 1985  | 1987  | 1989 <sup>1</sup> | 1991 <sup>1</sup> | 1993 <sup>2</sup> | 1995 <sup>2</sup> | 1997 <sup>2</sup> | 1998 <sup>2,3,4</sup> | 1999 <sup>2,3,4</sup> | 2000 <sup>2,3,4</sup> | 2001 <sup>2,4,5</sup> |
|----------------------------------|--------------------------|-------|-------|-------------------|-------------------|-------------------|-------------------|-------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|                                  | [In millions of dollars] |       |       |                   |                   |                   |                   |                   |                       |                       |                       |                       |
| New Jersey                       | 4,364                    | 5,975 | 5,876 | 6,410             | 8,933             | 8,009             | 8,200             | 11,069            | 11,107                | 10,145                | 10,580                | 10,164                |
| New Mexico                       | (T)                      | (D)   | 950   | 1,039             | 1,217             | (D)               | 1,461             | 1,310 (S)         | 1,450 (S)             | 1,352 (S)             | 1,203 (S)             | 231                   |
| New York                         | 5,951                    | 7,561 | 6,276 | 8,107             | 9,457             | 8,597             | 8,651             | 9,939 (S)         | 10,283                | 12,260                | 11,622                | 10,884                |
| North Carolina                   | 786                      | (D)   | 1,666 | 1,311             | 1,470             | 1,886             | 2,226             | 3,590             | 3,483                 | 3,632                 | 4,328                 | 4,138                 |
| North Dakota                     | (T)                      | 10    | 57    | (S)               | (S)               | (D)               | 12                | 33                | 46 (E)                | 95 (E)                | 83 (E)                | 347                   |
| Ohio                             | 2,282                    | 3,067 | 3,415 | 3,964             | 5,406             | 4,494             | 4,001             | 5,608             | 5,742                 | 6,531                 | 6,245                 | 6,694                 |
| Oklahoma                         | 407                      | (D)   | 367   | 333               | 448               | 299               | 288               | 428               | 369                   | 562 (E)               | 463                   | 543 (E)               |
| Oregon                           | (T)                      | (D)   | 281   | 357               | (S)               | 455               | 741               | 1,102             | 1,345                 | 1,408                 | 1,533                 | 2,677                 |
| Pennsylvania                     | 3,963                    | 3,844 | 4,430 | 4,653             | (S)               | 4,652             | 5,331             | 6,609 (S)         | 7,393                 | 7,474                 | 8,473                 | 8,967                 |
| Rhode Island                     | 171                      | 213   | 224   | 140               | 174               | 154               | 520               | 704 (S)           | 1,332 (S)             | 1,317 (S)             | 1,167 (S)             | 1,134 (S)             |
| South Carolina                   | (T)                      | (D)   | 500   | 388               | 479               | 461               | 739               | 783 (S)           | 996                   | 922                   | 1,059                 | 921                   |
| South Dakota                     | (T)                      | (S)   | 4     | 4                 | 6                 | (D)               | 19                | 26                | 40 (E)                | 57 (E)                | 89 (E)                | 87 (E)                |
| Tennessee                        | (T)                      | (D)   | 621   | 934               | 843               | 788               | 1,003             | 1,089             | 2,440                 | 2,205                 | 1,644                 | 1,503                 |
| Texas                            | (T)                      | 3,762 | 4,077 | 5,051             | 5,439             | 4,562             | 6,211 (S)         | 7,265             | 8,984                 | 8,661                 | 10,048                | 9,839                 |
| Utah                             | 242                      | (D)   | 774   | 389               | 407               | 279               | 803               | 1,027             | 1,119                 | 1,028                 | 1,063                 | 1,173                 |
| Vermont                          | (T)                      | (D)   | 236   | (D)               | (D)               | (D)               | 248               | 246               | 114                   | 346                   | 389                   | 339                   |
| Virginia                         | 941                      | 862   | 1,284 | 1,131             | 1,275             | 1,046             | 1,577             | 1,767             | 2,540                 | 2,662                 | 2,683                 | 2,957                 |
| Washington                       | (T)                      | 2,351 | 2,939 | 2,728             | 3,677             | 4,575 (S)         | 4,294 (S)         | 6,610 (S)         | 7,072 (S)             | 7,093 (S)             | 8,235 (S)             | 8,933 (S)             |
| West Virginia                    | (T)                      | (D)   | 83    | (D)               | (D)               | 100 (S)           | 243               | (D)               | 335                   | 351                   | 329                   | 211                   |
| Wisconsin                        | (T)                      | 728   | 1,165 | 1,035             | 1,304             | 1,296             | 1,706             | 1,707             | 1,929                 | 2,194                 | 2,415                 | 2,469 (S)             |
| Wyoming                          | 2                        | 3     | 4     | (D)               | 2                 | 15                | 25                | 28                | 20 (E)                | 65 (E)                | 37 (E)                | 28 (E)                |
| Undistributed funds <sup>6</sup> | 3,931                    | 1,495 | 2,281 | 2,945             | 772               | 683               | 1,773 (S)         | 7,211 (S)         | 5,521 (S)             | 5,647 (S)             | 9,804 (S)             | 9,819 (S)             |

<sup>1</sup> As a result of a new sample design, statistics for 1989-91 were revised after they were originally published and are not directly comparable with statistics for earlier years.

For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>

<sup>2</sup> As a result of annual sampling, implemented to produce statistics that better reflect R&D performance among firms in nonmanufacturing industries and small firms in all industries, statistics for 1992 and later years are not directly comparable with statistics for earlier years. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

<sup>3</sup> Some statistics for 1998, 1999, and 2000 have been revised since originally published. The new methodology described in footnote 4 was used to re-estimate the 1998, 1999, and 2000 statistics as well as to produce the 2001 statistics.

<sup>4</sup> The methodology to produce statistics by state was modified from previous years to address the recurring problem of large year-to-year variation in many state estimates. This variability was caused by many factors including the potential inefficiency of the sample at state levels, the rarity of R&D expenditures, and the large weights often associated with companies that report R&D in the survey for the first time. Under the new methodology, a portion of the amount of R&D reported by some companies not selected for the sample with certainty is allocated among all the states in which there was industrial activity. For a more detailed explanation of the new methodology and the definition of a "certainty" company, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>. Note that there was no change to the methodology for estimating the number of R&D performers in each state. This estimate continued to be calculated by summing the weights of the companies that actually reported R&D activity in a given state.

<sup>5</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs)

<sup>6</sup> Includes data reported on Form RD-1 that were not allocated to a specific state. Data reported on form RD-1A were allocated to the state in the address on the company's survey form which is usually the company's headquarters.

KEY: (D) = Data have been withheld to avoid disclosing information about individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

(T) = Data are not separately available but included in total.

(E) = Imputation or more than 50 percent due to raking of state data.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-31. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. and number of companies that performed R&D in the U.S., by state and source of funds: 2001

Page 1 of 2

| State                | Number of<br>companies <sup>1</sup> | Total                    | Federal   | Company |
|----------------------|-------------------------------------|--------------------------|-----------|---------|
|                      |                                     | [In millions of dollars] |           |         |
| United States, total | 33,263                              | 198,505                  | 16,899    | 181,606 |
| Alabama              | 476                                 | 905                      | 176       | 730     |
| Alaska               | 11                                  | 68                       | 2 (E)     | 66      |
| Arizona              | 148                                 | 2,707                    | 232       | 2,475   |
| Arkansas             | 91                                  | 254 (E)                  | 5 (E)     | 249 (E) |
| California           | 6,587                               | 41,745                   | 3,648 (S) | 38,097  |
| Colorado             | 1,147                               | 3,117                    | 579       | 2,538   |
| Connecticut          | 369                                 | 4,686                    | 110       | 4,576   |
| Delaware             | 55                                  | 1,232                    | 10        | 1,222   |
| District of Columbia | 32                                  | 242                      | 78        | 163     |
| Florida              | 1,258                               | 3,755                    | 736       | 3,019   |
| Georgia              | 654                                 | 1,912                    | 57 (E)    | 1,855   |
| Hawaii               | 135                                 | 93                       | 14 (S)    | 79 (E)  |
| Idaho                | 279                                 | 884                      | 3 (E)     | 882     |
| Illinois             | 2,899                               | 8,232                    | 749       | 7,483   |
| Indiana              | 782                                 | 3,583                    | 63        | 3,520   |
| Iowa                 | 629                                 | 817                      | 21 (S)    | 796     |
| Kansas               | 351                                 | 1,299 (S)                | (D)       | (D)     |
| Kentucky             | 474                                 | 636                      | 8 (E)     | 628     |
| Louisiana            | 205                                 | 316 (E)                  | 13 (E)    | 304 (E) |
| Maine                | 40                                  | 249                      | 49        | 200     |
| Maryland             | 587                                 | 3,682                    | 1,119     | 2,562   |
| Massachusetts        | 1,477                               | 11,378                   | 1,812 (S) | 9,566   |
| Michigan             | 814                                 | 14,283                   | 117       | 14,166  |
| Minnesota            | 1,513                               | 4,355                    | 207       | 4,149   |
| Mississippi          | 101                                 | 219 (E)                  | 7 (E)     | 212 (E) |
| Missouri             | 535                                 | 1,792                    | 142       | 1,650   |
| Montana              | 154                                 | 70 (E)                   | 3 (E)     | 67 (E)  |
| Nebraska             | 458                                 | 306                      | 9 (E)     | 297     |
| Nevada               | 45                                  | 290                      | 8 (E)     | 282     |
| New Hampshire        | 209                                 | 1,339                    | (D)       | (D)     |
| New Jersey           | 1,298                               | 10,164                   | 207       | 9,957   |
| New Mexico           | 189                                 | 231                      | 95        | 135 (E) |
| New York             | 2,051                               | 10,884                   | 994       | 9,890   |
| North Carolina       | 598                                 | 4,138                    | 70 (E)    | 4,068   |
| North Dakota         | 144                                 | 347                      | 1 (E)     | 346     |
| Ohio                 | 1,581                               | 6,694                    | 783       | 5,912   |
| Oklahoma             | 457                                 | 543 (E)                  | 14 (E)    | 529 (E) |
| Oregon               | 218                                 | 2,677                    | 19 (E)    | 2,658   |
| Pennsylvania         | 1,632                               | 8,967                    | 122 (E)   | 8,844   |
| Rhode Island         | 203                                 | 1,134 (S)                | (D)       | (D)     |
| South Carolina       | 221                                 | 921                      | 17 (E)    | 904     |
| South Dakota         | 18                                  | 87 (E)                   | 2 (E)     | 86 (E)  |
| Tennessee            | 525                                 | 1,503                    | 154       | 1,348   |
| Texas                | 1,524                               | 9,839                    | 185       | 9,654   |
| Utah                 | 621                                 | 1,173                    | 168 (S)   | 1,005   |

See explanatory information and SOURCE at end of table.



Table A-31. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. and number of companies that performed R&D in the U.S., by state and source of funds: 2001

Page 2 of 2

| State                            | Number of companies <sup>1</sup> | Total                    | Federal | Company   |
|----------------------------------|----------------------------------|--------------------------|---------|-----------|
|                                  |                                  | [In millions of dollars] |         |           |
| Vermont                          | 225                              | 339                      | 7 (S)   | 332       |
| Virginia                         | 643                              | 2,957                    | 680     | 2,277     |
| Washington                       | 609                              | 8,933 (S)                | 555     | 8,378 (S) |
| West Virginia                    | 121                              | 211                      | 6       | 205       |
| Wisconsin                        | 1,200                            | 2,469 (S)                | 22 (E)  | 2,447     |
| Wyoming                          | 9                                | 28 (E)                   | 1 (E)   | 27 (E)    |
| Undistributed funds <sup>2</sup> | 223                              | 9,819 (S)                | 784 (S) | 9,035 (S) |

<sup>1</sup> Detail does not add to total because multi-establishment companies may perform R&D in more than one state

<sup>2</sup> Includes data reported on Form RD-1 that were not allocated to a specific state.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

(E) = Indicates imputation of more than 50 percent due to raking of state data

NOTES: The methodology to produce estimates of total, Federal, and company R&D expenditures by state was modified from previous years to address the recurring problem of large year-to-year variation in many state estimates. This variability was caused by many factors including the potential inefficiency of the sample at state levels, the rarity of R&D expenditures, and the large weights often associated with companies that report R&D in the survey for the first time. Under the new methodology, a portion of the amount of R&D reported by some companies not selected for the sample with certainty is allocated among all the states in which there was industrial activity. For a more detailed explanation of the new methodology and the definition of "certainty" company, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>. Note that there was no change to the methodology for estimating the number of R&D performers in each state. This estimate continued to be calculated by summing the weights of the companies that actually reported R&D activity in a given state.

The company R&D in this table is the industrial R&D performed within company facilities funded from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and State governments. Excluded from this table are company-funded R&D not performed within the company (e.g., R&D contracted out to other organizations) and company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations)

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-32. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. and number of R&D-performing companies in the U.S., by industry and size of company, for the U.S. and top 10 R&D-performing states: 2001

| Industry and size of company                                     | NAICS codes                               | Number<br>of<br>companies | U.S., total              | California | Michigan | Massachusetts | New York | New Jersey | Texas   | Pennsylvania | Washington | Illinois | Ohio    | All other states<br>plus undistributed |
|--|---|---------------------------|--------------------------|------------|----------|---------------|----------|------------|---------|--------------|------------|----------|---------|--|
|  |   |                           | [In millions of dollars] |            |          |               |          |            |         |              |            |          |         |  |
| Distribution by industry:  |   |                           |                          |            |          |               |          |            |         |              |            |          |         |  |
| All industries   | 21-23, 31-33, 42, 44-81                   | 33,263                    | 198,505                  | 41,745     | 14,283   | 11,378        | 10,884   | 10,164     | 9,839   | 8,967        | 8,933 (S)  | 8,232    | 6,694   | 67,386                                 |
| Manufacturing  | 31-33                                     | 16,817                    | 120,705                  | 19,419     | 13,235   | 6,663         | 6,366    | 5,999      | 6,187   | 5,142        | 2,224      | 7,151    | 4,609   | 43,711                                 |
| Food   | 311                                       | 969                       | 1,819                    | 98         | 116      | 7 (E)         | 156      | 160        | 80      | 75           | 14 (E)     | 258      | 23      | 833                                    |
| Beverage and tobacco products                                    | 312                                       | 12                        | 152                      | (D)        | (D)      | 0 (S)         | (D)      | 0 (E)      | 0 (E)   | 0 (E)        | 0          | 0        | 0 (E)   | 136 (S)                                |
| Textiles, apparel, and leather                                   | 313-16                                    | 514                       | (D)                      | 24         | (D)      | 24            | 18       | 3 (E)      | 3 (E)   | 8 (S)        | 1 (E)      | (D)      | 1 (E)   | 170                                    |
| Wood products  | 321                                       | 177                       | 182                      | 17         | 5 (S)    | 0 (E)         | 1 (E)    | 0 (E)      | 4 (E)   | 50           | 4 (E)      | 1 (E)    | 3 (E)   | 96                                     |
| Paper, printing and support activities                           | 322, 323                                  | 495                       | (D)                      | 84 (S)     | 12       | 19            | 99       | 6 (E)      | 64      | 16 (S)       | (D)        | 27       | (D)     | 1,320                                  |
| Petroleum and coal products                                      | 324                                       | 27                        | (D)                      | (D)        | 0 (E)    | 0 (E)         | (D)      | (D)        | 460     | 1 (E)        | 0 (E)      | (D)      | 7       | 118                                    |
| Chemicals  | 325                                       | 1,877                     | 17,892                   | 1,413      | 557      | 799           | 2,073    | 3,034 (S)  | 593     | 1,721        | 185 (S)    | 1,342    | 405     | 5,771                                  |
| Basic chemicals  | 3251                                      | 523                       | 1,876                    | 76         | 34       | 43            | 91       | 223        | 149     | 232          | 2 (S)      | 185      | 152     | 690                                    |
| Resin, synthetic rubber, fibers, and filament                    | 3252                                      | 66                        | (D)                      | 39         | 406      | 76 (S)        | (D)      | 72         | 275     | 247 (S)      | 2          | 26       | 40      | 1,531                                  |
| Pharmaceuticals and medicines                                    | 3254                                      | 347                       | 10,137                   | 1,167      | 54       | 571           | 714      | 2,437 (S)  | 112     | 1,077 (S)    | 176 (S)    | 1,036    | 134 (S) | 2,660 (S)                              |
| Other chemicals  | 325 minus (3251-52, 3254)                 | 941                       | (D)                      | 131        | 63       | 110           | (D)      | 303        | 57      | 166          | 5 (E)      | 95       | 79      | 890 (S)                                |
| Plastics and rubber products                                     | 326                                       | 811                       | (D)                      | 132 (E)    | 182      | 27 (E)        | 46 (E)   | 84         | 64 (E)  | 92 (E)       | 16 (E)     | 100 (E)  | (D)     | 936                                    |
| Nonmetallic mineral products                                     | 327                                       | 464                       | 990                      | 105 (E)    | 87       | 54            | 34 (E)   | 29 (E)     | 43 (E)  | 57 (E)       | 10 (E)     | 50 (E)   | 128     | 391 (E)                                |
| Primary metals   | 331                                       | 427                       | 485                      | 5 (E)      | 16       | 11            | 9 (S)    | 17         | 28      | 215 (S)      | 19         | 16       | 40      | 109 (S)                                |
| Fabricated metal products  | 332                                       | 1,393                     | 1,599                    | 340 (S)    | 47       | 56            | 46 (S)   | 10 (E)     | 28 (E)  | 170 (S)      | 19 (S)     | 77       | 190     | 616 (S)                                |
| Machinery  | 333                                       | 2,489                     | 6,404                    | 1,923      | 217      | 140           | 250      | 98         | 211     | 188          | 87         | 710      | 242     | 2,338                                  |
| Computer and electronic products                                 | 334                                       | 3,230                     | 47,079                   | 10,471     | 369      | 4,660         | 2,458    | 1,964      | 4,091   | 2,010        | 439        | 3,147    | 686     | 16,785                                 |
| Computers and peripheral equipment                               | 3341                                      | 238                       | (D)                      | 1,484      | 5 (E)    | 195 (S)       | 33       | 11 (E)     | (D)     | 11 (E)       | 46         | (D)      | 24      | 807                                    |
| Communications equipment   | 3342                                      | 580                       | 15,507                   | 1,741      | 44 (E)   | 1,081         | 356 (E)  | 1,432      | 1,871   | 1,447        | 75 (E)     | 2,675    | 497     | 4,286                                  |
| Semiconductor and other electronic components                    | 3344                                      | 735                       | 14,358                   | 4,533      | 143      | 797           | 574      | 274        | 1,583   | 310          | 165        | 98 (E)   | 70 (E)  | 5,813                                  |
| Navigational, measuring, electromedical, and control instruments | 3345                                      | 1,538                     | 12,947                   | 2,472      | 164      | 2,451 (S)     | 1,459    | 160        | 183     | 225          | 118        | 177      | 81 (E)  | 5,457 (S)                              |
| Other computer and electronic products                           | 334 minus (3341-42, 3344-45)              | 139                       | (D)                      | 241 (E)    | 14 (E)   | 136           | 34 (E)   | 87 (S)     | (D)     | 16 (E)       | 35 (E)     | (D)      | 14 (E)  | 423 (E)                                |
| Electrical equipment, appliances, and components                 | 335                                       | 1,012                     | 4,980                    | 480        | 192      | 414 (S)       | 391 (S)  | 57 (E)     | 165 (E) | 223          | 12 (E)     | 302      | 793 (S) | 1,952                                  |
| Transportation equipment   | 336                                       | 1,015                     | 25,965                   | 3,626 (S)  | 11,185   | 71 (S)        | 584      | (D)        | 106     | 166          | (D)        | 909      | 429     | 7,451                                  |
| Motor vehicles, trailers, and parts                              | 3361-63                                   | 648                       | (D)                      | 2,767 (S)  | 11,084   | (D)           | 191 (S)  | 16         | 44      | 84           | 22         | 225      | 147     | 2,573                                  |
| Aerospace products and parts                                     | 3364                                      | 115                       | 7,868                    | 848        | (D)      | (D)           | 385      | (D)        | 56      | (D)          | (D)        | (D)      | 276     | 4,114                                  |
| Other transportation equipment                                   | 336 minus (3361-64)                       | 252                       | (D)                      | 11 (E)     | (D)      | 1 (E)         | 8        | 7 (S)      | 6 (E)   | (D)          | 14 (S)     | (D)      | 7       | 764                                    |
| Furniture and related products                                   | 337                                       | 324                       | 301                      | 13 (E)     | 114 (S)  | 1 (E)         | 4 (E)    | 1 (E)      | 4 (E)   | 3 (E)        | 3          | 14       | 7 (S)   | 138 (S)                                |
| Miscellaneous manufacturing                                      | 339                                       | 1,580                     | 6,606                    | 564        | 130      | 381           | 176      | 172        | 245     | 147          | 35         | 110      | 94      | 4,553 (E)                              |
| Medical equipment and supplies                                   | 3391                                      | 737                       | (D)                      | 493        | 43       | 340           | 157      | 145        | 236     | (D)          | 18 (E)     | 27 (E)   | 61      | 4,277 (E)                              |
| Other miscellaneous manufacturing                                | 339 minus (3391)                          | 843                       | (D)                      | 71         | 87       | 41            | 20 (E)   | 27         | 9 (E)   | (D)          | 16         | 84       | 32      | 275                                    |
| Other manufacturing  | 31-33 minus (311-16, 321-27, 331-37, 339) | --                        | --                       | --         | --       | --            | --       | --         | --      | --           | --         | --       | --      | --                                     |

See explanatory information and SOURCE at end of table.

Table A-32. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. and number of R&D-performing companies in the U.S., by industry and size of company, for the U.S. and top 10 R&D-performing states: 2001

| Industry and size of company                              | NAICS codes                    | Number<br>of<br>companies | U.S., total              | California  | Michigan | Massachusetts | New York  | New Jersey | Texas   | Pennsylvania | Washington | Illinois  | Ohio       | All other states<br>plus undistributed |
|---|--------------------------------|---------------------------|--------------------------|-------------|----------|---------------|-----------|------------|---------|--------------|------------|-----------|------------|--|
|   |                                |                           | [In millions of dollars] |             |          |               |           |            |         |              |            |           |            |  |
| Distribution by industry:                                 |                                |                           |                          |             |          |               |           |            |         |              |            |           |            |  |
| Nonmanufacturing  | 21-23, 42, 44-81               | 16,446                    | 77,799                   | 21,012      | 1,048    | 4,577         | 4,519     | 4,165      | 3,652   | 3,825        | 6,467 (S)  | 1,081 (E) | 2,086      | 25,369                                 |
| Mining, extraction, and support activities                | 21                             | 68                        | (D)                      | (D)         | 0 (E)    | 0 (E)         | (D)       | 1 (S)      | 318     | 0 (E)        | 1          | (D)       | (D)        | 359 (S)                                |
| Utilities   | 22                             | 85                        | 133                      | (D)         | 1        | 1             | (D)       | 6 (S)      | 16      | 2            | 0 (E)      | 0 (E)     | (D)        | 59                                     |
| Construction  | 23                             | 399                       | 320                      | 14 (E)      | 5 (E)    | 2 (E)         | 6 (E)     | 14         | 11 (E)  | 5 (E)        | 3 (E)      | 41        | 41         | 179 (E)                                |
| Trade   | 42, 44, 45                     | 4,735                     | 24,372                   | 6,292       | 84       | 1,086         | 1,556     | 1,129      | 1,364   | 2,617        | 482        | 176       | 256 (S)    | 9,329                                  |
| Transportation and warehousing                            | 48, 49                         | 362                       | 1,848                    | 162 (E)     | 43 (E)   | 24 (E)        | 77 (E)    | 77 (E)     | 154 (E) | 64 (E)       | 35 (E)     | 81 (E)    | 68 (E)     | 1,063 (E)                              |
| Information   | 51                             | 1,850                     | (D)                      | 4,141       | 443      | 962           | 1,364 (S) | 409        | 793     | 204          | (D)        | 163       | 167        | 3,978                                  |
| Publishing  | 511                            | 1,279                     | 13,760                   | 3,651       | 61       | 703           | 1,082 (S) | (D)        | 483     | 130          | (D)        | 119 (E)   | 111        | 2,541                                  |
| Newspaper, periodical, book, and<br>database              | 5111                           | 152                       | 649                      | 31 (E)      | 17       | 68            | 288 (S)   | 29         | 23      | 25           | 8 (E)      | 18 (E)    | 27         | 115 (E)                                |
| Software  | 5112                           | 1,127                     | 13,111                   | 3,620       | 44       | 634           | 794 (S)   | (D)        | 460 (S) | 105          | (D)        | 101 (E)   | 83 (S)     | 2,426                                  |
| Broadcasting and telecommunications                       | 513                            | 361                       | (D)                      | 67          | (D)      | 119 (S)       | 182 (S)   | (D)        | 65      | 12 (E)       | 7 (E)      | 12 (E)    | 17 (E)     | 611                                    |
| Radio and television broadcasting                         | 5131                           | 51                        | (D)                      | 16 (E)      | 3 (E)    | (D)           | 18 (E)    | 1 (E)      | 7 (E)   | 8 (E)        | 3 (E)      | 4 (E)     | 6 (E)      | (D)                                    |
| Telecommunications  | 5133                           | 310                       | (D)                      | 51          | 1 (E)    | (D)           | 165 (S)   | (D)        | 58      | 5 (E)        | 4 (E)      | 8         | 11         | 512                                    |
| Other broadcasting and<br>telecommunications              | 513 minus (5131, 5133)         | 1                         | (D)                      | 0           | 0        | 0             | 0         | 0          | 0       | 0            | 0          | 0         | 0          | (D)                                    |
| Other information   | 51 minus (511, 513)            | 209                       | (D)                      | 423         | (D)      | 140           | 100       | 32         | 245     | 62           | 27         | 32        | 39         | 826                                    |
| Finance, insurance, and real estate                       | 52, 53                         | 338                       | (D)                      | 148         | 13 (E)   | 316           | 366       | 137        | 92      | 109          | (D)        | (D)       | 159        | 998 (E)                                |
| Professional, scientific, and technical services          | 54                             | 5,840                     | 27,704                   | 9,760       | 401      | 2,104         | 957       | 2,289 (S)  | 749 (E) | 740          | 1,177      | 428 (E)   | 1,198      | 7,903                                  |
| Architectural, engineering, and related<br>services       | 5413                           | 938                       | 3,386                    | 1,214       | 68 (E)   | 52 (E)        | 51 (E)    | 78         | 140     | 57 (E)       | 36 (E)     | 40 (E)    | 78         | 1,572                                  |
| Computer systems design and related<br>services           | 5415                           | 2,516                     | 9,154                    | 2,117       | 94 (E)   | 446           | 394 (E)   | 1,775 (S)  | 275 (E) | 237          | 183        | 201 (E)   | 107 (E)    | 3,327 (E)                              |
| Scientific R&D services                                   | 5417                           | 1,576                     | 14,244                   | 6,295       | 226      | 1,553         | 453       | 389        | 298     | 407          | 940        | 82 (E)    | 993        | 2,608                                  |
| Other professional, scientific, and technical<br>services | 54 minus (5413, 5415,<br>5417) | 811                       | 920                      | 134 (S) (E) | 13 (E)   | 54 (S) (E)    | 59 (E)    | 46         | 36 (E)  | 39 (E)       | 18 (S) (E) | 105 (S)   | 21 (S) (E) | 396 (E)                                |
| Management of companies and enterprises                   | 55                             | 375                       | 381                      | 116         | 7 (E)    | 14            | 28 (E)    | 15 (E)     | 25 (E)  | 10 (E)       | 5 (E)      | 13 (E)    | 12 (E)     | 136 (E)                                |
| Health care services                                      | 621-23                         | 1,294                     | 1,149                    | 100 (E)     | 27 (E)   | 36 (E)        | 71 (E)    | 32 (E)     | 56 (E)  | 41 (E)       | 15 (E)     | 36 (E)    | 36 (E)     | 698 (E)                                |
| Other nonmanufacturing                                    | 56, 61, 624, 71, 72, 81        | 1,099                     | 1,259                    | 127 (E)     | 24 (E)   | 31 (E)        | 53 (E)    | 57 (S)     | 73 (E)  | 32 (E)       | 15 (E)     | 48 (E)    | 130 (S)    | 667 (E)                                |

See explanatory information and SOURCE at end of table.

Table A-32. Total (Federal plus company and other) funds for industrial R&D performance in the U.S. and number of R&D-performing companies in the U.S., by industry and size of company, for the U.S. and top 10 R&D-performing states: 2001

Page 3 of 3

| Industry and size of company                              |  | Number of companies | U.S., total              | California | Michigan | Massachusetts | New York  | New Jersey | Texas   | Pennsylvania | Washington | Illinois | Ohio    | All other states plus undistributed |
|---|--|---------------------|--------------------------|------------|----------|---------------|-----------|------------|---------|--------------|------------|----------|---------|-------------------------------------|
|   |  |                     | [In millions of dollars] |            |          |               |           |            |         |              |            |          |         |                                     |
| Distribution by size of company:<br>[Number of employees] |  |                     |                          |            |          |               |           |            |         |              |            |          |         |                                     |
| Total   |  | 33,263              | 198,505                  | 40,430     | 14,283   | 11,240        | 10,884    | 10,164     | 9,839   | 8,967        | 8,691 (S)  | 8,232    | 6,694   | 67,386                              |
| 5 to 24   |  | 14,681              | 4,828                    | 777 (E)    | 150 (E)  | 200 (E)       | 288 (E)   | 202 (E)    | 355 (E) | 217 (E)      | 110 (E)    | 225 (E)  | 198 (E) | 2,106 (E)                           |
| 25 to 49  |  | 5,036               | 3,750                    | 921 (E)    | 89 (E)   | 241 (E)       | 251 (E)   | 177 (E)    | 183 (E) | 146 (E)      | 86 (E)     | 134 (E)  | 109 (E) | 1,412 (E)                           |
| 50 to 99  |  | 5,030               | 8,202                    | 1,948 (E)  | 206 (E)  | 546 (E)       | 438 (E)   | 365 (E)    | 488 (E) | 379 (E)      | 167 (E)    | 279 (E)  | 298 (E) | 3,087 (E)                           |
| 100 to 249  |  | 4,261               | 12,916                   | 4,010      | 303 (E)  | 848           | 618 (E)   | 535 (E)    | 518 (E) | 431 (E)      | 368        | 443 (E)  | 364 (E) | 4,479 (E)                           |
| 250 to 499  |  | 1,504               | 8,702                    | 2,451      | 341      | 626           | 470       | 313        | 304 (E) | 254 (E)      | 287        | 257 (E)  | 375     | 3,024 (E)                           |
| 500 to 999  |  | 1,194               | 10,564                   | 2,942      | 255      | 877           | 397       | 277        | 493     | 312          | 332        | 317      | 534     | 3,828                               |
| 1,000 to 4,999  |  | 1,039               | 26,748                   | 8,835      | 614      | 2,022         | 1,105 (S) | 1,434      | 888     | 996          | 451        | 645      | 621     | 9,137                               |
| 5,000 to 9,999  |  | 244                 | 17,487                   | 4,942      | 315      | 753           | 549 (S)   | 1,323      | 1,540   | 1,506        | 607        | 673      | 927     | 4,352                               |
| 10,000 to 24,999  |  | 156                 | 27,065                   | 3,409      | 934      | 1,178         | 1,449     | 2,723 (S)  | 1,820   | 1,639        | 253 (S)    | 540 (S)  | 651     | 12,471                              |
| 25,000 or more  |  | 118                 | 78,244                   | 10,197 (S) | 11,076   | 3,948 (S)     | 5,320     | 2,814      | 3,251   | 3,086        | 6,030 (S)  | 4,719    | 2,618   | 23,491                              |

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

(E) = Indicates imputation of more than 50 percent due to raking of state data.

(-) = Indicates data not collected.

NOTES: The methodology to produce estimates of total, Federal, and company R&D expenditures by state was modified from previous years to address the recurring problem of large year-to-year variation in many state estimates. This variability was caused by many factors including the potential inefficiency of the sample at state levels, the rarity of R&D expenditures, and the large weights often associated with companies that report R&D in the survey for the first time. Under the new methodology, a portion of the amount of R&D reported by some companies not selected for the sample with certainty is allocated among all the states in which there was industrial activity. For a more detailed explanation of the new methodology and the definition of "certainty" company, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>. Note that there was no change to the methodology for estimating the number of R&D performers in each state. This estimate continued to be calculated by summing the weights of the companies that actually reported R&D activity in a given state.

The frame from which the statistical sample was selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. Statistics for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-33. Total (Federal plus company and other) funds for industrial R&amp;D performance in the U.S., by industry and size of company, by type of cost: 2001

Page 1 of 1

| Industry and size of company                                     | NAICS codes                               | Total R&D cost <sup>1</sup> | Wages of R&D personnel | Fringe benefits of R&D personnel | Materials and supplies | R&D depreciation | Other costs |
|--|---|-----------------------------|------------------------|----------------------------------|------------------------|------------------|-------------|
|  |   | [In millions of dollars]    | [Percent]              |                                  |                        |                  |             |
| Distribution by industry:  |   |                             |                        |                                  |                        |                  |             |
| All industries   | 21-23, 31-33, 42, 44-81                   | 198,505                     | 43.7                   | 4.3                              | 12.8                   | 3.6              | 35.7        |
| Manufacturing  | 31-33                                     | 120,705                     | 41.8                   | 4.4                              | 15.4                   | 3.7              | 34.7        |
| Food   | 311                                       | 1,819                       | 42.6                   | 6.6                              | 12.0                   | 4.8              | 34.0        |
| Beverage and tobacco products                                    | 312                                       | 152                         | 44.5                   | 11.3                             | 1.6                    | 0.0              | 42.6 (S)    |
| Textiles, apparel, and leather                                   | 313-16                                    | (D)                         | 41.9                   | 0.0                              | (D)                    | (D)              | 41.0        |
| Wood products  | 321                                       | 182                         | 61.5                   | 0.2                              | 17.0                   | 6.5              | 14.8 (S)    |
| Paper, printing and support activities                           | 322, 323                                  | (D)                         | 45.0                   | (D)                              | 12.9                   | (D)              | 38.6        |
| Petroleum and coal products                                      | 324                                       | (D)                         | 64.0                   | 0.0                              | (D)                    | (D)              | 27.2        |
| Chemicals  | 325                                       | 17,892                      | 34.8                   | 3.1                              | 9.2                    | 4.7              | 48.2        |
| Basic chemicals  | 3251                                      | 1,876                       | 42.7                   | 3.8                              | 10.7                   | 5.5              | 37.3        |
| Resin, synthetic rubber, fibers, and filament                    | 3252                                      | (D)                         | 49.8                   | (D)                              | 10.4                   | (D)              | 28.2        |
| Pharmaceuticals and medicines                                    | 3254                                      | 10,137                      | 27.1                   | 2.9                              | 8.3                    | 3.7              | 58.0        |
| Other chemicals  | 325 minus (3251-52, 3254)                 | (D)                         | 45.0                   | (D)                              | 10.2                   | (D)              | 37.4 (S)    |
| Plastics and rubber products                                     | 326                                       | (D)                         | 48.4                   | (D)                              | 25.1                   | (D)              | 16.3        |
| Nonmetallic mineral products                                     | 327                                       | 990                         | 38.8                   | 6.7                              | 14.6                   | 2.2              | 37.6 (S)    |
| Primary metals   | 331                                       | 485                         | 74.5                   | 2.8                              | 5.5                    | 2.0              | 15.2        |
| Fabricated metal products  | 332                                       | 1,599                       | 49.7                   | 5.5                              | 12.4                   | 2.8              | 29.6 (S)    |
| Machinery  | 333                                       | 6,404                       | 43.2                   | 2.2                              | 25.4                   | 3.9              | 25.2        |
| Computer and electronic products                                 | 334                                       | 47,079                      | 45.0                   | 3.0                              | 16.5                   | 5.3              | 30.2 (S)    |
| Computers and peripheral equipment                               | 3341                                      | (D)                         | 49.6                   | (D)                              | 13.2                   | 6.6              | (D)         |
| Communications equipment   | 3342                                      | 15,507                      | 48.5                   | 1.1                              | 26.1                   | 1.1              | 23.2        |
| Semiconductor and other electronic components                    | 3344                                      | 14,358                      | 44.0                   | 6.1                              | 13.5                   | 10.1             | 26.2        |
| Navigational, measuring, electromedical, and control instruments | 3345                                      | 12,947                      | 41.0                   | 1.8                              | 11.1                   | 4.2              | 42.0 (S)    |
| Other computer and electronic products                           | 334 minus (3341-42, 3344-45)              | (D)                         | 65.5                   | (D)                              | 10.0                   | 3.9              | (D)         |
| Electrical equipment, appliances, and components                 | 335                                       | 4,980                       | 47.8                   | 3.3                              | 15.8                   | 2.6              | 30.4 (S)    |
| Transportation equipment   | 336                                       | 25,965                      | 43.0                   | 8.6                              | 18.6                   | 1.5              | 28.3 (S)    |
| Motor vehicles, trailers, and parts                              | 3361-63                                   | (D)                         | 46.3                   | (D)                              | 18.3                   | 1.3              | (D)         |
| Aerospace products and parts                                     | 3364                                      | 7,868                       | 36.3                   | 1.4                              | 19.1                   | 1.8              | 41.4        |
| Other transportation equipment                                   | 336 minus (3361-64)                       | (D)                         | 42.1                   | (D)                              | 18.5                   | 0.9              | (D)         |
| Furniture and related products                                   | 337                                       | 301                         | 62.6                   | 10.4                             | 18.0                   | 1.2              | 7.8 (S)     |
| Miscellaneous manufacturing                                      | 339                                       | 6,606                       | 19.5                   | 2.0                              | 6.6                    | 0.6              | 71.4        |
| Medical equipment and supplies                                   | 3391                                      | (D)                         | 16.2                   | (D)                              | 6.3                    | (D)              | 75.6        |
| Other miscellaneous manufacturing                                | 339 minus (3391)                          | (D)                         | 57.7                   | (D)                              | 9.0                    | (D)              | 23.8        |
| Other manufacturing  | 31-33 minus (311-16, 321-27, 331-37, 339) | --                          | --                     | --                               | --                     | --               | --          |

See explanatory information and SOURCE at end of table.

Table A-33. Total (Federal plus company and other) funds for industrial R&amp;D performance in the U.S., by industry and size of company, by type of cost: 2001

Page 2 of 3

| Industry and size of company                           | NAICS codes                 | Total R&D cost <sup>1</sup> | Wages of R&D personnel | Fringe benefits of R&D personnel | Materials and supplies | R&D depreciation | Other costs |
|--|-----------------------------|-----------------------------|------------------------|----------------------------------|------------------------|------------------|-------------|
|  |                             | [In millions of dollars]    | [Percent]              |                                  |                        |                  |             |
| Distribution by industry:                              |                             |                             |                        |                                  |                        |                  |             |
| Nonmanufacturing                                       | 21-23, 42, 44-81            | 77,799                      | 46.8                   | 4.1                              | 8.1                    | 3.6              | 37.5        |
| Mining, extraction, and support activities             | 21                          | (D)                         | 55.9                   | 3.9                              | 11.4                   | (D)              | (D)         |
| Utilities  | 22                          | 133                         | 21.7                   | 0.6                              | 31.6                   | 0.0              | 46.1        |
| Construction   | 23                          | 320                         | 54.0                   | 3.1                              | 29.4                   | 0.6              | 13.0        |
| Trade  | 42, 44, 45                  | 24,372                      | 35.3                   | 3.6                              | 8.1                    | 3.6              | 49.4        |
| Transportation and warehousing                         | 48, 49                      | 1,848                       | 52.4                   | 17.8                             | 1.4                    | 0.0              | 28.4 (S)    |
| Information  | 51                          | (D)                         | 65.6                   | 5.1                              | 3.2                    | (D)              | (D)         |
| Publishing   | 511                         | 13,760                      | 62.0                   | 5.8                              | 3.4                    | 2.7              | 26.2        |
| Newspaper, periodical, book, and database              | 5111                        | 649                         | 63.0                   | 4.3                              | 3.0                    | 12.6             | 17.2        |
| Software   | 5112                        | 13,111                      | 62.0                   | 5.8                              | 3.4                    | 2.4              | 26.4 (S)    |
| Broadcasting and telecommunications                    | 513                         | (D)                         | 85.9                   | 2.1                              | (D)                    | 4.2              | (D)         |
| Radio and television broadcasting                      | 5131                        | (D)                         | 0.0                    | 0.0                              | (D)                    | 0.0              | (D)         |
| Telecommunications                                     | 5133                        | (D)                         | 85.9                   | 2.1                              | (D)                    | 4.3              | (D)         |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)      | (D)                         | 85.0                   | 2.4                              | (D)                    | 4.6              | (D)         |
| Other information                                      | 51 minus (511, 513)         | (D)                         | 77.7                   | 2.0                              | 2.7                    | (D)              | (D)         |
| Finance, insurance, and real estate                    | 52, 53                      | (D)                         | 76.4                   | 4.2                              | (D)                    | (D)              | 9.6         |
| Professional, scientific, and technical services       | 54                          | 27,704                      | 42.5                   | 4.0                              | 12.1                   | 4.8              | 36.5        |
| Architectural, engineering, and related services       | 5413                        | 3,386                       | 40.2                   | 5.7                              | 16.9                   | 6.0              | 31.1        |
| Computer systems design and related services           | 5415                        | 9,154                       | 65.9                   | 4.0                              | 4.3                    | 3.7              | 22.1        |
| Scientific R&D services                                | 5417                        | 14,244                      | 35.8                   | 3.6                              | 13.7                   | 5.1              | 41.9        |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417) | 920                         | 40.6                   | 7.7                              | 6.6                    | 1.5              | 43.5        |
| Management of companies and enterprises                | 55                          | 381                         | 31.7                   | 0.4                              | 3.2                    | 1.4              | 63.3        |
| Health care services                                   | 621-23                      | 1,149                       | 47.2                   | 0.7                              | 10.9                   | 1.1              | 40.1        |
| Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81     | 1,259                       | 50.9                   | 0.0                              | 2.1                    | 0.3              | 46.7        |

See explanatory information and SOURCE at end of table.

Table A-33. Total (Federal plus company and other) funds for industrial R&amp;D performance in the U.S., by industry and size of company, by type of cost: 2001

Page 5 of 10

| Industry and size of company                              |  | Total R&D cost <sup>1</sup> | Wages of R&D personnel | Fringe benefits of R&D personnel | Materials and supplies | R&D depreciation | Other costs |
|---|--|-----------------------------|------------------------|----------------------------------|------------------------|------------------|-------------|
|   |  | [In millions of dollars]    | [Percent]              |                                  |                        |                  |             |
| Distribution by size of company:<br>[Number of employees] |  |                             |                        |                                  |                        |                  |             |
| Total   |  | 198,505                     | 43.7                   | 4.3                              | 12.8                   | 3.6              | 35.7        |
| 5 to 24   |  | 4,828                       | 44.8                   | 8.2                              | 14.4                   | 4.4              | 28.1        |
| 25 to 49  |  | 3,750                       | 33.0                   | 3.9                              | 11.7                   | 3.9              | 47.6        |
| 50 to 99  |  | 8,202                       | 38.7                   | 4.0                              | 14.7                   | 4.0              | 38.7        |
| 100 to 249  |  | 12,916                      | 42.4                   | 4.1                              | 13.2                   | 5.0              | 35.3        |
| 250 to 499  |  | 8,702                       | 47.3                   | 3.7                              | 11.0                   | 4.3              | 33.6        |
| 500 to 999  |  | 10,564                      | 43.4                   | 4.6                              | 12.1                   | 4.3              | 35.6        |
| 1,000 to 4,999  |  | 26,748                      | 48.4                   | 4.3                              | 10.4                   | 4.5              | 32.4        |
| 5,000 to 9,999  |  | 17,487                      | 44.0                   | 2.6                              | 13.1                   | 3.4              | 36.9        |
| 10,000 to 24,999  |  | 27,065                      | 36.1                   | 3.2                              | 10.6                   | 2.9              | 47.2        |
| 25,000 or more  |  | 78,244                      | 44.6                   | 5.0                              | 14.3                   | 3.4              | 32.7        |

<sup>1</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.  
(S) = Indicates imputation of more than 50 percent.

NOTE: Starting in 1999, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. Statistics for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-34. Domestic employment of companies that performed industrial R&amp;D in the U.S., by industry, by size of company: 2001

Page 4 of 4

| Industry   | NAICS codes                  | Total <sup>1</sup> | Size of company [number of employees] |          |          |            |            |            |                |                |                  |                |
|--|------------------------------|--------------------|---------------------------------------|----------|----------|------------|------------|------------|----------------|----------------|------------------|----------------|
|  |                              |                    | 5 to 24                               | 25 to 49 | 50 to 99 | 100 to 249 | 250 to 499 | 500 to 999 | 1,000 to 4,999 | 5,000 to 9,999 | 10,000 to 24,999 | 25,000 or more |
|  |                              |                    | [In thousands]                        |          |          |            |            |            |                |                |                  |                |
| Distribution by industry:  |                              |                    |                                       |          |          |            |            |            |                |                |                  |                |
| All industries   | 21-23, 31-33, 42, 44-81      | 16,749             | 159                                   | 178      | 360      | 639        | 520        | 814        | 2,333          | 1,772          | 2,397            | 7,577          |
| Manufacturing  | 31-33                        | 9,913              | 70                                    | 76       | 231      | 428        | 357        | 576        | 1,688          | 1,203          | 1,528            | 3,756          |
| Food   | 311                          | 1,192              | 5                                     | 2        | 8        | 19         | 59         | 77         | 195            | 66             | 183              | 578            |
| Beverage and tobacco products                                    | 312                          | 59                 | 0                                     | 0        | 0        | 0          | 0          | 0          | 15             | (D)            | (D)              | 0              |
| Textiles, apparel, and leather                                   | 313-16                       | 229                | 4                                     | (D)      | 4        | 1          | 15         | 7          | 105            | (D)            | 74               | 0              |
| Wood products  | 321                          | 92                 | 1                                     | 0        | 3        | 2          | (D)        | (D)        | 19             | 23             | 42               | 0              |
| Paper, printing and support activities                           | 322, 323                     | 611                | 2                                     | 5        | 10       | 7          | (D)        | (D)        | 17             | 220            | 70               | 266            |
| Petroleum and coal products                                      | 324                          | 168                | 0                                     | 0        | 0        | 0          | 4          | 1          | 7              | 25             | 15               | 115            |
| Chemicals  | 325                          | 838                | 9                                     | 9        | 27       | (D)        | (D)        | 29         | 215            | 144            | 166              | 194            |
| Basic chemicals  | 3251                         | 169                | 1                                     | 2        | 7        | 5          | 4          | 8          | 60             | 46             | 35               | 0              |
| Resin, synthetic rubber, fibers, and filament                    | 3252                         | 118                | 0                                     | 0        | 4        | 0          | (D)        | 4 (S)      | 14             | 18             | (D)              | (D)            |
| Pharmaceuticals and medicines                                    | 3254                         | 289                | 0                                     | 4        | 7        | (D)        | (D)        | 5          | 59             | 29             | 80               | 105            |
| Other chemicals  | 325 minus (3251-52, 3254)    | 262                | 7                                     | 3        | 8        | 9          | 25         | 11         | 83             | 50             | (D)              | (D)            |
| Plastics and rubber products                                     | 326                          | 451                | 1                                     | 0        | 17       | (D)        | 41         | 43         | 139            | 56             | 54               | (D)            |
| Nonmetallic mineral products                                     | 327                          | 273                | 1                                     | 5        | 0        | 32         | 15         | 8          | 52             | 27             | 63               | 71             |
| Primary metals   | 331                          | 311                | 1                                     | 5        | 1        | (D)        | 12         | 13         | 63             | 56             | 38               | (D)            |
| Fabricated metal products  | 332                          | 517                | 8                                     | 0        | 20       | 55         | 21         | 38         | 110            | 78             | 77               | 111            |
| Machinery  | 333                          | 764                | 12                                    | 13       | 32       | 61         | 57         | 61         | 185            | 105            | 111              | 126            |
| Computer and electronic products                                 | 334                          | 1,420              | 11                                    | (D)      | 59       | 99         | 23         | 107        | 214            | 141            | (D)              | 548            |
| Computers and peripheral equipment                               | 3341                         | 112                | 1                                     | (D)      | 4        | 6          | 4          | 9          | 11             | 32 (S)         | (D)              | (D)            |
| Communications equipment   | 3342                         | 284                | 4                                     | 0        | 9        | 22         | 9          | 40         | 34             | 36             | (D)              | (D)            |
| Semiconductor and other electronic components                    | 3344                         | 501                | 0                                     | 10       | 12       | 32         | 4          | 40         | 111            | 31             | 74               | 189            |
| Navigational, measuring, electromedical, and control instruments | 3345                         | 491                | 6                                     | 7        | 33       | 24         | 4          | 15         | (D)            | (D)            | 72               | 239            |
| Other computer and electronic products                           | 334 minus (3341-42, 3344-45) | 32                 | 0                                     | 0        | 1        | 15         | 2          | 3          | (D)            | (D)            | 0                | 0              |
| Electrical equipment, appliances, and components                 | 335                          | 550                | 3                                     | 9        | 12       | 34         | 5          | 62         | 70             | (D)            | 163              | (D)            |
| Transportation equipment   | 336                          | 1,759              | 2                                     | 0        | 11       | 9          | 30         | 76         | 82             | (D)            | 137              | (D)            |
| Motor vehicles, trailers, and parts                              | 3361-63                      | 1,065              | 1                                     | 0        | 7        | 0          | 17         | 73         | 65             | 67             | 43               | 791            |
| Aerospace products and parts                                     | 3364                         | 538                | 0                                     | 0        | 3        | 9          | 0          | (D)        | 7              | 26             | (D)              | 462            |
| Other transportation equipment                                   | 336 minus (3361-64)          | 157                | 1                                     | 0        | 0        | 0          | 13         | (D)        | 10             | (D)            | (D)              | (D)            |

See explanatory information and SOURCE at end of table.



Table A-34. Domestic employment of companies that performed industrial R&amp;D in the U.S., by industry, by size of company: 2001

| Industry                                   | NAICS codes                                  | Total <sup>1</sup> | Size of company [number of employees] |             |             |               |               |               |                   |                   |                     |                   |
|--|--|--------------------|---------------------------------------|-------------|-------------|---------------|---------------|---------------|-------------------|-------------------|---------------------|-------------------|
|  |  |                    | 5 to<br>24                            | 25 to<br>49 | 50 to<br>99 | 100 to<br>249 | 250 to<br>499 | 500 to<br>999 | 1,000 to<br>4,999 | 5,000 to<br>9,999 | 10,000 to<br>24,999 | 25,000<br>or more |
|  |  |                    | [In thousands]                        |             |             |               |               |               |                   |                   |                     |                   |
| Distribution by industry:                  |  |                    |                                       |             |             |               |               |               |                   |                   |                     |                   |
| Furniture and related products             | 337  | 247                | 0                                     | 0           | 6           | 13            | 12            | (D)           | 49                | 37                | 68                  | (D)               |
| Miscellaneous manufacturing                | 339  | 431                | 10                                    | 11          | 21          | 38            | 14            | 26            | 152               | (D)               | 42                  | (D)               |
| Medical equipment and supplies             | 3391   | 246                | 6                                     | 9           | 8           | 8             | 5             | 10            | 85                | 37                | (D)                 | (D)               |
| Other miscellaneous manufacturing          | 339 minus (3391)                             | 185                | 4                                     | 2           | 14          | 30            | 9             | 17            | 67                | (D)               | (D)                 | (D)               |
| Other manufacturing                        | 31-33 minus (311-16,<br>321-27, 331-37, 339) | --                 | --                                    | --          | --          | --            | --            | --            | --                | --                | --                  | --                |
| Nonmanufacturing                           | 21-23, 42, 44-81                             | 6,836              | 89                                    | 103         | 129         | 211           | 163           | 238           | 645               | 569               | 868                 | 3,820             |
| Mining, extraction, and support activities | 21   | 113                | 0                                     | 1           | 0           | 0             | (D)           | 2             | 14                | 34                | (D)                 | (D)               |
| Utilities                                  | 22   | 299                | 0                                     | 0           | 0           | 6             | 1             | (D)           | 29                | 96                | 113                 | (D)               |
| Construction                               | 23   | 99                 | 2                                     | 4           | 0           | 12            | 5             | (D)           | 15                | (D)               | 52                  | 0                 |
| Trade                                      | 42, 44, 45                                   | 1,562              | 31                                    | 24          | 40          | 54            | 4             | 13            | 101               | 136               | 173                 | 987               |
| Transportation and warehousing             | 48, 49                                       | 650                | 2                                     | (D)         | (D)         | 0             | 0             | (D)           | 5                 | 0                 | (D)                 | 623               |
| Information                                | 51   | 1,493              | 9                                     | 11          | 20          | 25            | (D)           | 62            | 219               | (D)               | 161                 | 946               |
| Publishing                                 | 511  | 392                | 7                                     | 8           | 15          | 19            | 23            | 29            | 104               | (D)               | 78                  | (D)               |
| Newspaper, periodical, book, and database  | 5111   | 145                | 1                                     | 2           | 4           | 0             | (D)           | 0             | 20                | 0                 | (D)                 | (D)               |
| Software                                   | 5112   | 247                | 6                                     | 6           | 11          | 19            | (D)           | 29            | 84                | (D)               | (D)                 | (D)               |
| Broadcasting and telecommunications        | 513  | (D)                | 2                                     | 0           | 0           | 0             | (D)           | 28            | 98                | 0                 | 25                  | 779               |
| Radio and television broadcasting          | 5131   | (D)                | 0                                     | 0           | 0           | 0             | 0             | 0             | 92                | 0                 | (D)                 | 0                 |
| Telecommunications                         | 5133   | 827                | 2                                     | 0           | 0           | 0             | (D)           | 28            | (D)               | 0                 | (D)                 | 779               |
| Other broadcasting and telecommunications  | 513 minus (5131, 5133)                       | (D)                | 0                                     | 0           | 0           | 0             | (D)           | 0             | (D)               | 0                 | 0                   | 0                 |
| Other information                          | 51 minus (511, 513)                          | (D)                | 0                                     | 3           | 5           | 6             | 4             | 5             | 18                | (D)               | 58                  | (D)               |

See explanatory information and SOURCE at end of table.

Table A-34. Domestic employment of companies that performed industrial R&amp;D in the U.S., by industry, by size of company: 2001

| Industry   | NAICS codes                 | Total <sup>1</sup> | Size of company [number of employees] |             |             |               |               |               |                   |                   |                     |                   |
|--|-----------------------------|--------------------|---------------------------------------|-------------|-------------|---------------|---------------|---------------|-------------------|-------------------|---------------------|-------------------|
|  |                             |                    | 5 to<br>24                            | 25 to<br>49 | 50 to<br>99 | 100 to<br>249 | 250 to<br>499 | 500 to<br>999 | 1,000 to<br>4,999 | 5,000 to<br>9,999 | 10,000 to<br>24,999 | 25,000<br>or more |
|  |                             | [In thousands]     |                                       |             |             |               |               |               |                   |                   |                     |                   |
| Distribution by industry:                              |                             |                    |                                       |             |             |               |               |               |                   |                   |                     |                   |
| Finance, insurance, and real estate                    | 52, 53                      | 789                | 3                                     | 0           | 0           | 1             | 16            | 4             | 39                | 55                | 111                 | 560               |
| Professional, scientific, and technical services       | 54                          | 900                | 26                                    | 49          | 51          | 93            | 64            | 58            | 133               | 118               | 40                  | 268               |
| Architectural, engineering, and related services       | 5413                        | 225                | 3                                     | 16          | 10          | 8             | 19            | 9             | 48                | 41                | (D)                 | (D)               |
| Computer systems design and related services           | 5415                        | 290                | 11                                    | 17          | 27          | 48            | 23            | 32            | 50                | 26 (S)            | (D)                 | (D)               |
| Scientific R&D services                                | 5417                        | 164                | 7                                     | 9           | 11          | 28            | 19            | (D)           | 20                | 20                | 0                   | (D)               |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417) | 221                | 5                                     | 7           | 3           | 9             | 3             | (D)           | 15                | 31                | (D)                 | 133               |
| Management of companies and enterprises                | 55                          | 26                 | 5                                     | (D)         | (D)         | (D)           | 0             | 9             | 8                 | (D)               | 0                   | 0                 |
| Health care services                                   | 621-23                      | 156                | 5                                     | 1           | 10          | (D)           | 2             | 13            | 18                | (D)               | 23                  | (D)               |
| Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81     | 748                | 5                                     | 10          | 3           | 15            | 44            | 73            | 64                | 94                | 152                 | 288               |

<sup>1</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.  
 (S) = Indicates imputation of more than 50 percent.  
 (--) = Indicates data not collected.

NOTE: For 1999, 2000, and 2001, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. Statistics for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

**Table A-35. R&D funds per employee spent by companies that performed industrial R&D in the U.S.,  
by size of company: 1997-2001**

| Size of company<br>[Number of employees]  | 1997   | 1998   | 1999 <sup>1</sup> | 2000   | 2001   |
|---|--------|--------|-------------------|--------|--------|
| Total (company, Federal, and other)<br>R&D funds per employee [In dollars] <sup>2</sup> |        |        |                   |        |        |
| Total   | 7,791  | 9,251  | 10,028            | 11,297 | 11,852 |
| 5 to 24   | 19,764 | 20,630 | 34,057            | 37,703 | 30,366 |
| 25 to 49  | 12,985 | 12,788 | 19,590            | 27,786 | 21,040 |
| 50 to 99  | 13,948 | 17,080 | 20,460            | 22,381 | 22,801 |
| 100 to 249  | 10,561 | 13,897 | 11,892            | 15,190 | 20,206 |
| 250 to 499  | 10,803 | 10,110 | 11,861            | 12,915 | 16,736 |
| 500 to 999  | 6,287  | 6,872  | 9,031             | 12,550 | 12,981 |
| 1,000 to 4,999  | 6,849  | 7,755  | 9,276             | 9,819  | 11,465 |
| 5,000 to 9,999  | 6,331  | 6,832  | 7,881             | 9,160  | 9,866  |
| 10,000 to 24,999  | 6,747  | 8,494  | 8,031             | 10,497 | 11,292 |
| 25,000 or more  | 7,990  | 9,671  | 10,047            | 10,646 | 10,327 |
| Company and other (except Federal)<br>R&D funds per employee [In dollars]               |        |        |                   |        |        |
| Total   | 6,608  | 7,929  | 8,791             | 10,215 | 10,843 |
| 5 to 24   | 16,961 | 17,967 | 31,087            | 32,637 | 26,260 |
| 25 to 49  | 11,772 | 10,994 | 18,072            | 26,552 | 19,911 |
| 50 to 99  | 12,533 | 15,534 | 18,754            | 20,797 | 21,277 |
| 100 to 249  | 9,710  | 11,998 | 10,781            | 14,063 | 18,792 |
| 250 to 499  | 10,021 | 9,271  | 11,132            | 11,775 | 15,660 |
| 500 to 999  | 5,810  | 6,418  | 8,272             | 11,866 | 12,211 |
| 1,000 to 4,999  | 6,660  | 7,531  | 8,942             | 9,570  | 11,204 |
| 5,000 to 9,999  | 6,059  | 6,572  | 6,825             | 8,273  | 8,935  |
| 10,000 to 24,999  | 6,461  | 8,168  | 7,903             | 10,249 | 10,915 |
| 25,000 or more  | 5,884  | 7,254  | 7,955             | 8,949  | 8,975  |

<sup>1</sup> Some statistics for 1999 have been revised since originally published.

<sup>2</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

NOTE: Averages were derived by dividing total and company R&D funds spent during a calendar year by total employment in March of that year.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-36. Distribution of total employment in companies that performed industrial R&D in the U.S., ranked by size of R&D program: 1991-2001

| Companies ranked by<br>size of R&D program | 1991      | 1992 <sup>1</sup> | 1993 | 1994 | 1995 | 1996 | 1997 <sup>1</sup> | 1998 | 1999 <sup>1</sup> | 2000 | 2001 <sup>2</sup> |
|--|-----------|-------------------|------|------|------|------|-------------------|------|-------------------|------|-------------------|
|  | [Percent] |                   |      |      |      |      |                   |      |                   |      |                   |
| Total                                      | 100       | 100               | 100  | 100  | 100  | 100  | 100               | 100  | 100               | 100  | 100               |
| First 4 (1-4)                              | 7         | 6                 | 6    | 6    | 6    | 6    | 5                 | 5    | 4                 | 2    | 2                 |
| Next 4 (5-8)                               | 3         | 3                 | 2    | 2    | 2    | 2    | 2                 | 3    | 2                 | 2    | 4                 |
| Next 12 (9-20)                             | 5         | 5                 | 5    | 4    | 4    | 4    | 3                 | 4    | 5                 | 6    | 3                 |
| Next 20 (21-40)                            | 4         | 4                 | 4    | 4    | 4    | 4    | 4                 | 4    | 4                 | 4    | 4                 |
| Next 60 (41-100)                           | 9         | 8                 | 8    | 7    | 7    | 7    | 6                 | 7    | 6                 | 8    | 4                 |
| Next 100 (101-200)                         | 10        | 10                | 9    | 8    | 7    | 8    | 6                 | 8    | 7                 | 7    | 8                 |
| Next 200 (201-400)                         | 10        | 10                | 10   | 9    | 9    | 9    | 11                | 11   | 14                | 13   | 12                |
| All others                                 | 52        | 54                | 55   | 59   | 61   | 59   | 63                | 60   | 58                | 57   | 63                |

<sup>1</sup> Some percentages for 1992, 1997, and 1999 have been revised since originally published

<sup>2</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

**Table A-37. Number of full-time equivalent (FTE) R&D scientists and engineers in companies that performed industrial R&D in the U.S., by industry and size of company, by source of R&D funds: January 2002**

Page 1 of 3

Page 1 of 3

| Industry and size of company                                     | NAICS codes                               | Total          | Federal  | Company   |
|--|---|----------------|----------|-----------|
|  |   | [In thousands] |          |           |
| Distribution by industry:  |   |                |          |           |
| All industries   | 21-23, 31-33, 42, 44-81                   | 1,060.2        | 69.1 (S) | 991.1     |
| Manufacturing  | 31-33                                     | 615.8          | 39.8 (S) | 576.0 (S) |
| Food   | 311                                       | 12.2           | (D)      | (D)       |
| Beverage and tobacco products                                    | 312                                       | 0.9            | 0.0      | 0.9 (S)   |
| Textiles, apparel, and leather                                   | 313-16                                    | 2.5            | 0.0      | 2.5       |
| Wood products  | 321                                       | 2.0 (S)        | 0.0      | 2.0 (S)   |
| Paper, printing and support activities                           | 322, 323                                  | 11.1           | (D)      | (D)       |
| Petroleum and coal products                                      | 324                                       | 2.8 (S)        | (D)      | (D)       |
| Chemicals  | 325                                       | 81.5           | 0.8 (S)  | 80.7 (S)  |
| Basic chemicals  | 3251                                      | 9.3            | 0.2 (S)  | 9.1       |
| Resin, synthetic rubber, fibers, and filament                    | 3252                                      | 11.1           | (D)      | (D)       |
| Pharmaceuticals and medicines                                    | 3254                                      | 39.6           | 0.0      | 39.6      |
| Other chemicals  | 325 minus (3251-52, 3254)                 | 21.5 (S)       | (D)      | (D)       |
| Plastics and rubber products                                     | 326                                       | 11.5           | 0.0      | 11.5 (S)  |
| Nonmetallic mineral products                                     | 327                                       | 6.9            | 0.0      | 6.9 (S)   |
| Primary metals   | 331                                       | 4.7            | 0.0 (S)  | 4.7       |
| Fabricated metal products  | 332                                       | 10.1           | (D)      | (D)       |
| Machinery  | 333                                       | 55.9           | (D)      | (D)       |
| Computer and electronic products                                 | 334                                       | 256.7 (S)      | 27.0 (S) | 229.7 (S) |
| Computers and peripheral equipment                               | 3341                                      | 15.6           | (D)      | (D)       |
| Communications equipment   | 3342                                      | 90.6 (S)       | 1.6 (S)  | 89.0 (S)  |
| Semiconductor and other electronic components                    | 3344                                      | 83.3           | (D)      | (D)       |
| Navigational, measuring, electromedical, and control instruments | 3345                                      | 63.5 (S)       | 24.7 (S) | 38.8 (S)  |
| Other computer and electronic products                           | 334 minus (3341-42, 3344-45)              | 3.7            | (D)      | (D)       |
| Electrical equipment, appliances, and components                 | 335                                       | 33.6           | 1.8 (S)  | 31.8 (S)  |
| Transportation equipment   | 336                                       | 99.5           | 9.4      | 90.1      |
| Motor vehicles, trailers, and parts                              | 3361-63                                   | 73.5           | (D)      | (D)       |
| Aerospace products and parts                                     | 3364                                      | 19.1           | 7.7 (S)  | 11.4      |
| Other transportation equipment                                   | 336 minus (3361-64)                       | 6.9 (S)        | (D)      | (D)       |
| Furniture and related products                                   | 337                                       | 2.2            | 0.0      | 2.2 (S)   |
| Miscellaneous manufacturing                                      | 339                                       | 21.9           | 0.1      | 21.8      |
| Medical equipment and supplies                                   | 3391                                      | 15.7           | (D)      | (D)       |
| Other miscellaneous manufacturing                                | 339 minus (3391)                          | 6.2            | (D)      | (D)       |
| Other manufacturing  | 31-33 minus (311-16, 321-27, 331-37, 339) | --             | --       | --        |

See explanatory information and SOURCE at end of table.

Table A-37. Number of full-time equivalent (FTE) R&D scientists and engineers in companies that performed industrial R&D in the U.S., by industry and size of company, by source of R&D funds: January 2002

Page 2 of 3

Page 2 of 3

| Industry and size of company                           | NAICS codes                 | Total          | Federal  | Company |
|--|-----------------------------|----------------|----------|---------|
|  |                             | [In thousands] |          |         |
| Distribution by industry:                              |                             |                |          |         |
| Nonmanufacturing                                       | 21-23, 42, 44-81            | 444.4          | 29.3     | 415.1   |
| Mining, extraction, and support activities             | 21                          | 4.9            | (D)      | (D)     |
| Utilities  | 22                          | 0.6            | (D)      | (D)     |
| Construction   | 23                          | 2.1            | 0.0      | 2.1     |
| Trade  | 42, 44, 45                  | 114.3          | 0.2      | 114.1   |
| Transportation and warehousing                         | 48, 49                      | 0.7            | (D)      | (D)     |
| Information  | 51                          | 119.4          | (D)      | (D)     |
| Publishing   | 511                         | 86.7           | 0.3 (S)  | 86.4    |
| Newspaper, periodical, book, and database              | 5111                        | 5.5            | 0.0      | 5.5     |
| Software   | 5112                        | 81.1           | 0.3 (S)  | 80.8    |
| Broadcasting and telecommunications                    | 513                         | 13.5           | (D)      | (D)     |
| Radio and television broadcasting                      | 5131                        | (D)            | 0.0      | (D)     |
| Telecommunications                                     | 5133                        | 11.7           | (D)      | (D)     |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)      | (D)            | 0.0      | (D)     |
| Other information                                      | 51 minus (511, 513)         | 19.2           | (D)      | (D)     |
| Finance, insurance, and real estate                    | 52, 53                      | 19.9           | 0.0      | 19.9    |
| Professional, scientific, and technical services       | 54                          | 152.9          | 17.7 (S) | 135.2   |
| Architectural, engineering, and related services       | 5413                        | 23.7           | 4.8      | 18.9    |
| Computer systems design and related services           | 5415                        | 62.8           | (D)      | (D)     |
| Scientific R&D services                                | 5417                        | 59.9           | 12.0 (S) | 47.9    |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417) | 6.5            | (D)      | (D)     |
| Management of companies and enterprises                | 55                          | 1.5            | 0.0      | 1.5     |
| Health care services                                   | 621-23                      | 8.1            | (D)      | (D)     |
| Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81     | 20.0           | (D)      | (D)     |

See explanatory information and SOURCE at end of table.

Table A-37. Number of full-time equivalent (FTE) R&D scientists and engineers in companies that performed industrial R&D in the U.S., by industry and size of company, by source of R&D funds: January 2002

Page 3 of 3

Page 3 of 3

| Industry and size of company                              |  | Total          | Federal  | Company  |
|---|--|----------------|----------|----------|
|   |  | [In thousands] |          |          |
| Distribution by size of company:<br>[Number of employees] |  |                |          |          |
| Total   |  | 1,060.2        | 69.1 (S) | 991.1    |
| 5 to 24   |  | 34.4           | 0.0      | 34.4     |
| 25 to 49  |  | 26.7           | 0.1      | 26.6     |
| 50 to 99  |  | 40.4           | 0.9      | 39.5     |
| 100 to 249  |  | 79.9           | 2.0      | 77.9     |
| 250 to 499  |  | 47.6           | 4.0      | 43.6     |
| 500 to 999  |  | 61.9           | 3.3      | 58.6     |
| 1,000 to 4,999  |  | 159.1          | 1.4      | 157.7    |
| 5,000 to 9,999  |  | 110.6 (S)      | 15.3 (S) | 95.3 (S) |
| 10,000 to 24,999  |  | 144.3          | 5.0 (S)  | 139.3    |
| 25,000 or more  |  | 355.2          | 37.2 (S) | 318.0    |

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

(-) = Indicates data not collected.

NOTE: The company R&D in this table is the industrial R&D performed within company facilities funded from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and State governments. Excluded from this table are company-funded R&D not performed within the company (e.g., R&D contracted out to other organizations) and company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations).

Starting in 1999, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. Statistics for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-38. R&D funds per full-time equivalent (FTE) R&D scientist or engineer spent by companies that performed industrial R&D in the U.S., by industry, by size of company: 2001

| Industry   | NAICS codes                  | Total <sup>1</sup> | Size of company [number of employees] |             |             |               |               |               |                   |                   |                     |                   |
|--|------------------------------|--------------------|---------------------------------------|-------------|-------------|---------------|---------------|---------------|-------------------|-------------------|---------------------|-------------------|
|  |                              |                    | 5 to<br>24                            | 25 to<br>49 | 50 to<br>99 | 100 to<br>249 | 250 to<br>499 | 500 to<br>999 | 1,000 to<br>4,999 | 5,000 to<br>9,999 | 10,000 to<br>24,999 | 25,000<br>or more |
|  |                              | Dollars            |                                       |             |             |               |               |               |                   |                   |                     |                   |
| Distribution by industry:  |                              |                    |                                       |             |             |               |               |               |                   |                   |                     |                   |
| All industries   | 21-23, 31-33, 42, 44-81      | 188,918            | 109,688                               | 127,059     | 215,026     | 190,689       | 186,587       | 164,217       | 170,716           | 160,490 (S)       | 182,960             | 225,611 (S)       |
| Manufacturing  | 31-33                        | 197,125            | 85,355                                | 115,980     | 282,580     | 220,190       | 185,146       | 166,833       | 178,011           | 138,887 (S)       | 175,737             | 236,168 (S)       |
| Food   | 311                          | (D)                | 17,985                                | 213,402     | (D)         | 147,928       | 172,802       | 138,838       | 140,879 (S)       | 45,233 (S)        | 157,947             | 352,214 (S)       |
| Beverage and tobacco products                                    | 312                          | 106,875            | 0                                     | 0           | 0           | 0             | 37,333        | 0             | 248,555           | (D)               | (D)                 | (D)               |
| Textiles, apparel, and leather                                   | 313-16                       | (D)                | (D)                                   | (D)         | 81,811      | 18,955        | 110,852       | 149,323       | 118,707           | (D)               | 178,271             | (D)               |
| Wood products  | 321                          | 108,375 (S)        | 223,844                               | 0           | (D)         | 73,355        | (D)           | (D)           | 177,201           | (D)               | (D)                 | 0                 |
| Paper, printing and support activities                           | 322, 323                     | (D)                | 40,970                                | 72,950      | 118,476     | 118,404       | (D)           | (D)           | 172,869           | 178,877 (S)       | 219,981 (S)         | 260,259 (S)       |
| Petroleum and coal products                                      | 324                          | (D)                | 0                                     | 0           | 0           | 0             | 70,919        | 40,189        | 68,400            | (D)               | (D)                 | (D)               |
| Chemicals  | 325                          | 219,787            | 112,221                               | (D)         | 264,015     | 143,361       | 117,840       | 180,783       | 193,601           | 189,471 (S)       | 224,512             | 267,972           |
| Basic chemicals  | 3251                         | (D)                | 70,472                                | 284,800     | (D)         | 176,966       | 158,656       | 125,505       | 205,544           | 109,813           | (D)                 | 0                 |
| Resin, synthetic rubber, fibers, and filament                    | 3252                         | 266,773            | 0                                     | 0           | 1,390,259   | 0             | (D)           | 417,760       | 119,285 (S)       | (D)               | (D)                 | (D)               |
| Pharmaceuticals and medicines                                    | 3254                         | (D)                | 49,960                                | (D)         | 183,824     | (D)           | (D)           | 296,446       | 265,392           | 231,818           | 221,768             | 277,785           |
| Other chemicals  | 325 minus (3251-52, 3254)    | (D)                | 127,860                               | 94,331 (S)  | 99,591      | 73,022        | 102,675       | 132,233       | 155,800           | 169,912 (S)       | (D)                 | (D)               |
| Plastics and rubber products                                     | 326                          | (D)                | 20,275 (S)                            | 0           | 36,336      | 81,931        | 1,357,587     | 124,516       | 128,205           | 85,007 (S)        | (D)                 | (D)               |
| Nonmetallic mineral products                                     | 327                          | 146,461            | 312,844                               | 177,325     | 405         | 138,098       | 528,665       | 149,503       | 129,394           | 71,641 (S)        | 94,237 (S)          | (D)               |
| Primary metals   | 331                          | 104,639 (S)        | 299,505                               | 73,517      | (D)         | 141,617       | 83,019        | 128,123       | 127,494           | 35,578 (S)        | 39,621 (S)          | (D)               |
| Fabricated metal products  | 332                          | 160,874            | 116,671                               | 0           | 72,083      | 108,021       | 62,044        | 143,129       | 89,236            | 163,748           | 146,441 (S)         | (D)               |
| Machinery  | 333                          | 119,067            | 138,909                               | 92,222      | 155,431     | 79,189        | 121,843       | 161,497       | 121,622           | 42,021 (S)        | 208,695             | 161,445           |
| Computer and electronic products                                 | 334                          | 187,265 (S)        | (D)                                   | 183,921     | 600,102     | 298,810       | 110,783       | 174,368       | 207,525           | 155,684 (S)       | 135,975 (S)         | 188,178 (S)       |
| Computers and peripheral equipment                               | 3341                         | (D)                | 149,895                               | (D)         | 63,670      | 345,912       | 164,367       | 185,602       | 105,839           | 249,904 (S)       | (D)                 | 0                 |
| Communications equipment   | 3342                         | 181,051 (S)        | 146,780                               | 0           | 3,656,613   | 263,508       | 90,593        | 243,370       | 175,722           | 204,436 (S)       | (D)                 | (D)               |
| Semiconductor and other electronic components                    | 3344                         | 193,669 (S)        | (D)                                   | 202,655     | 524,989     | 218,885       | 147,084       | 92,719        | 267,762 (S)       | 177,119           | 126,821 (S)         | (D)               |
| Navigational, measuring, electromedical, and control instruments | 3345                         | 186,733 (S)        | 194,309                               | 173,325     | 308,218     | 140,678       | 89,865        | 136,684       | 153,255           | 85,041 (S)        | 187,555             | 271,546 (S)       |
| Other computer and electronic products                           | 334 minus (3341-42, 3344-45) | (D)                | 0                                     | 0           | 142,181     | 1,006,453     | 103,840       | 128,698       | (D)               | (D)               | 0                   | 0                 |
| Electrical equipment, appliances, and components                 | 335                          | (D)                | 29,992 (S)                            | 354,162     | 96,656      | 286,350       | 42,330 (S)    | 149,199       | 150,512 (S)       | 209,340 (S)       | 157,929             | (D)               |
| Transportation equipment   | 336                          | 249,499            | 139,182                               | 0           | 56,225      | 31,627        | 126,530       | 212,622       | 115,257           | 166,539 (S)       | 196,108 (S)         | 273,188           |
| Motor vehicles, trailers, and parts                              | 3361-63                      | (D)                | 206,441                               | 0           | 129,909     | 0             | 102,229       | 204,142       | 118,351           | 142,745 (S)       | (D)                 | 248,610           |
| Aerospace products and parts                                     | 3364                         | 356,549            | 0                                     | 0           | 30,050      | (D)           | 0             | (D)           | 103,326           | (D)               | (D)                 | 366,803           |
| Other transportation equipment                                   | 336 minus (3361-64)          | (D)                | 5,000 (S)                             | 0           | 0           | 0             | 184,785       | 53,143        | 107,724           | (D)               | (D)                 | (D)               |

See explanatory information and SOURCE at end of table.



Table A-38. R&D funds per full-time equivalent (FTE) R&D scientist or engineer spent by companies that performed industrial R&D in the U.S., by industry, by size of company: 2001

| Industry   | NAICS codes                               | Total <sup>1</sup> | Size of company [number of employees] |         |            |            |             |             |             |             |             |             |
|--|---|--------------------|---------------------------------------|---------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|
|  |   |                    | 5 to                                  | 25 to   | 50 to      | 100 to     | 250 to      | 500 to      | 1,000 to    | 5,000 to    | 10,000 to   | 25,000      |
|  |   |                    | 24                                    | 49      | 99         | 249        | 499         | 999         | 4,999       | 9,999       | 24,999      | or more     |
| [Dollars]  |   |                    |                                       |         |            |            |             |             |             |             |             |             |
| Distribution by industry:                              |   |                    |                                       |         |            |            |             |             |             |             |             |             |
| Furniture and related products                         | 337                                       | 131,160 (S)        | 0                                     | 0       | 10,000 (S) | 74,658     | 142,053     | 110,842     | 129,910     | 170,165 (S) | 145,817 (S) | (D)         |
| Miscellaneous manufacturing                            | 339                                       | 355,556            | 171,928 (S)                           | (D)     | 87,439     | 163,418    | 183,537     | 132,560     | 244,226     | 239,920 (S) | 688,445     | (D)         |
| Medical equipment and supplies                         | 3391                                      | (D)                | 202,820                               | (D)     | 72,771     | 235,124    | 202,113     | 141,246     | 282,105 (S) | 273,330 (S) | (D)         | (D)         |
| Other miscellaneous manufacturing                      | 339 minus (3391)                          | (D)                | 88,759 (S)                            | 121,918 | 99,940     | 75,790     | 125,263     | 110,991     | 155,820     | (D)         | (D)         | (D)         |
| Other manufacturing                                    | 31-33 minus (311-16, 321-27, 331-37, 339) | --                 | --                                    | --      | --         | --         | --          | --          | --          | --          | --          | --          |
| Nonmanufacturing                                       | 21-23, 42, 44-81                          | 177,456            | 118,190                               | 132,467 | 176,356    | 176,616    | 187,498     | 161,674     | 161,143     | 216,450     | 193,880     | 198,681     |
| Mining, extraction, and support activities             | 21  | (D)                | (D)                                   | 148,600 | 0          | 0          | (D)         | 101,650     | 156,977     | 202,739     | (D)         | (D)         |
| Utilities  | 22  | 216,721            | 0                                     | 0       | 0          | 48,333     | 11,000      | (D)         | 172,789     | 266,662     | 303,038     | (D)         |
| Construction   | 23  | 251,443            | 202,545                               | 30,780  | 0          | (D)        | 478,457 (S) | (D)         | 310,361     | (D)         | 448,315     | 0           |
| Trade  | 42, 44, 45                                | 228,388            | 108,688                               | 19,360  | 66,109     | 303,895    | 138,982     | 116,577     | 225,415     | 323,135     | 307,367     | 210,181     |
| Transportation and warehousing                         | 48, 49                                    | (D)                | (D)                                   | 6,245   | (D)        | 0          | 0           | (D)         | (D)         | 0           | (D)         | (D)         |
| Information  | 51  | (D)                | 119,994                               | 120,923 | 190,198    | 109,505    | 163,837     | 138,242     | 134,408     | (D)         | 100,208     | 207,898     |
| Publishing   | 511                                       | 158,631            | 172,832                               | 104,180 | 190,956    | 100,552    | 167,391     | 127,723     | 135,369     | (D)         | (D)         | (D)         |
| Newspaper, periodical, book, and database              | 5111                                      | 141,812            | 240,570                               | 177,313 | (D)        | 0          | (D)         | (D)         | (D)         | (D)         | (D)         | (D)         |
| Software   | 5112                                      | 159,568            | 166,617                               | 93,796  | 193,113    | 100,552    | 188,891 (S) | 128,054     | 131,885     | (D)         | (D)         | (D)         |
| Broadcasting and telecommunications                    | 513                                       | (D)                | 12,000                                | 0       | (D)        | (D)        | (D)         | 187,083 (S) | (D)         | 0           | (D)         | 86,346 (S)  |
| Radio and television broadcasting                      | 5131                                      | (D)                | 0                                     | 0       | 0          | 0          | 0           | 0           | 176,146     | 0           | 177,269     | (D)         |
| Telecommunications                                     | 5133                                      | (D)                | 12,000                                | 0       | (D)        | (D)        | (D)         | 187,083 (S) | (D)         | 0           | (D)         | 110,922 (S) |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)                    | (D)                | 0                                     | 0       | 0          | 0          | (D)         | 0           | 0           | 0           | 0           | 0           |
| Other information                                      | 51 minus (511, 513)                       | (D)                | 0                                     | 413,224 | 191,875    | 205,226    | 140,979     | 211,937     | 88,843 (S)  | (D)         | 172,946     | (D)         |
| Finance, insurance, and real estate                    | 52, 53                                    | (D)                | 45,234                                | 0       | 0          | 399,119    | (D)         | (D)         | 101,730 (S) | 55,932 (S)  | 251,156 (S) | 64,035      |
| Professional, scientific, and technical services       | 54  | 185,626            | 160,967                               | 166,436 | 179,900    | 203,335    | 186,612     | 184,383 (S) | 188,287     | 176,641 (S) | (D)         | (D)         |
| Architectural, engineering, and related services       | 5413                                      | 117,377 (S)        | 233,925 (S)                           | 104,054 | 171,710    | 181,377    | 131,725     | (D)         | 250,143 (S) | (D)         | (D)         | (D)         |
| Computer systems design and related services           | 5415                                      | 167,606            | 169,993                               | 132,876 | 160,244    | 166,106    | 124,069     | 171,797     | 128,765     | 102,328 (S) | (D)         | (D)         |
| Scientific R&D services                                | 5417                                      | 244,068            | 141,860                               | 244,297 | 209,132    | 253,278    | 255,221     | 292,426     | 269,290     | (D)         | 0           | (D)         |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417)               | 123,965            | 145,576                               | 115,750 | 23,082 (S) | 92,235 (S) | (D)         | (D)         | 136,929     | 88,474      | (D)         | (D)         |

See explanatory information and SOURCE at end of table.

**Table A-38. R&D funds per full-time equivalent (FTE) R&D scientist or engineer spent by companies that performed industrial R&D in the U.S., by industry, by size of company: 2001**

Page 6 of 8

| Industry                                | NAICS codes             | Total <sup>1</sup> | Size of company (number of employees) |             |             |               |               |               |                   |                   |                     |                   |
|---|-------------------------|--------------------|---------------------------------------|-------------|-------------|---------------|---------------|---------------|-------------------|-------------------|---------------------|-------------------|
|   |                         |                    | 5 to<br>24                            | 25 to<br>49 | 50 to<br>99 | 100 to<br>249 | 250 to<br>499 | 500 to<br>999 | 1,000 to<br>4,999 | 5,000 to<br>9,999 | 10,000 to<br>24,999 | 25,000<br>or more |
|   |                         |                    | [Dollars]                             |             |             |               |               |               |                   |                   |                     |                   |
| Distribution by industry:               |                         |                    |                                       |             |             |               |               |               |                   |                   |                     |                   |
| Management of companies and enterprises | 55                      | 422,433            | 268,427                               | (D)         | 501,564     | (D)           | 0             | (D)           | (D)               | 0                 | 0                   | 0                 |
| Health care services                    | 621-23                  | 208,671            | 184,751                               | 44,191 (S)  | 267,627 (S) | 7,602         | 167,180       | 196,928       | 71,253            | (D)               | (D)                 | (D)               |
| Other nonmanufacturing                  | 56, 61, 624, 71, 72, 81 | 97,345             | 86,658                                | 97,717 (S)  | 10,989      | 88,736        | 58,736        | 87,513        | 61,993            | (D)               | 96,250 (S)          | 239,938 (S)       |

<sup>1</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.  
(S) = Indicates imputation of more than 50 percent.  
(-) = Indicates data not collected

NOTE: The number of full-time-equivalent R&D scientists and engineers used to estimate the cost per R&D scientist or engineer in 2001 is the arithmetic mean of the numbers of R&D scientists and engineers reported for January of 2001 and 2002. This number is then divided into the total R&D expenditures of 2001, and the ratio is attributed to 2001.

Starting in 1999, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior reports detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. Statistics for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

**Table A-39. R&D funds per full-time equivalent (FTE) R&D scientist or engineer spent by companies that performed industrial R&D in the U.S., ranked by size of R&D program: 1991-2001**

| Companies ranked by<br>size of R&D program       | 1991      | 1992 <sup>1</sup> | 1993 <sup>1</sup> | 1994 <sup>1</sup> | 1995 <sup>1</sup> | 1996 <sup>1</sup> | 1997 <sup>1</sup> | 1998 <sup>1</sup> | 1999 <sup>2</sup> | 2000        | 2001 <sup>3</sup> |
|--|-----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------|-------------------|
|  | [Dollars] |                   |                   |                   |                   |                   |                   |                   |                   |             |                   |
| First 4  | 213,200   | 202,492           | 252,629           | 218,906           | 234,791           | 231,784           | 229,602 (S)       | 242,408           | 289,072 (S)       | 283,219 (S) | 229,610 (S)       |
| Next 4   | 223,700   | 238,950           | 199,559           | 245,626 (S)       | 188,928 (S)       | 185,032 (S)       | 180,389           | 193,597           | 192,657           | 199,586     | 221,857           |
| Next 12  | 159,900   | 170,276           | 199,118           | 188,437           | 190,548           | 202,670           | 238,022 (S)       | 239,162           | 266,117 (S)       | 265,044 (S) | 245,756 (S)       |
| Next 20  | (S)       | (S)               | (S)               | 182,699           | 204,159           | 210,552           | 213,496           | 196,276           | 208,682 (S)       | 251,340 (S) | 250,910           |
| Next 60  | 170,500   | 181,760           | 193,925           | 181,163           | 196,023           | 202,405           | 206,350           | 208,144           | 203,559           | 224,965     | 223,650           |
| Next 100   | 169,000   | 173,101           | 138,227           | 174,524           | 162,707           | 160,560           | 155,255           | 162,965           | 162,654           | 176,239     | 182,360           |
| Next 200   | 121,000   | 126,545           | 140,292           | 156,025           | 152,977           | 151,812           | 157,347           | 154,395           | 161,664           | 238,522     | 180,908           |
| Average of above 400 R&D<br>performing companies | 176,043   | 181,446           | 186,107           | 192,482           | 190,019           | 192,116           | 197,208           | 199,563           | 212,057           | 234,130     | 219,293 (S)       |

<sup>1</sup> As a result of annual sampling, implemented to produce statistics that better reflect R&D performance among firms in nonmanufacturing industries and small firms in all industries, statistics for 1992 and later years are not directly comparable with statistics for earlier years. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>.

<sup>2</sup> Some statistics for 1999 have been revised since originally published.

<sup>3</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

KEY: (S) = Indicates imputation of more than 50 percent. Prior to 1994, data have been withheld.

NOTE: The number of full-time-equivalent R&D scientists and engineers used to estimate the cost per R&D scientist or engineer is the arithmetic mean of the numbers of R&D scientists and engineers reported for January in two consecutive years. This number is then divided into the total R&D expenditures of the earlier year, and the ratio is attributed to the earlier year.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

**Table A-40. Full-time equivalent (FTE) R&D scientists and engineers per 1,000 employees in companies that performed industrial R&D in the U.S., by industry and size of company: 1999-2001**

Page 1 of 3

| Industry and size of company                                     | NAICS codes                               | 1999 <sup>1</sup> | 2000    | 2001 <sup>2</sup> |
|--|---|-------------------|---------|-------------------|
| Distribution by industry:  |   |                   |         |                   |
| All industries   | 21-23, 31-33, 42, 44-81                   | 57                | 59      | 63                |
| Manufacturing  | 31-33                                     | 55                | 55      | 62                |
| Food   | 311                                       | 8                 | 6       | 8                 |
| Beverage and tobacco products                                    | 312                                       | 25                | 23      | 25                |
| Textiles, apparel, and leather                                   | 313-16                                    | 31                | 9       | 10                |
| Wood products  | 321                                       | 10                | 18 (S)  | 20 (S)            |
| Paper, printing and support activities                           | 322, 323                                  | 20 (S)            | 19 (S)  | 19 (S)            |
| Petroleum and coal products                                      | 324                                       | 26                | 15 (S)  | 17 (S)            |
| Chemicals  | 325                                       | 84                | 98      | 98                |
| Basic chemicals  | 3251                                      | 60                | 71      | 64                |
| Resin, synthetic rubber, fibers, and filament                    | 3252                                      | 65                | 77      | 89                |
| Pharmaceuticals and medicines                                    | 3254                                      | 133               | 136     | 143               |
| Other chemicals  | 325 minus (3251-52, 3254)                 | 61 (S)            | 77 (S)  | 75 (S)            |
| Plastics and rubber products                                     | 326                                       | 24                | 24      | 27                |
| Nonmetallic mineral products                                     | 327                                       | 15                | 30      | 27                |
| Primary metals   | 331                                       | 13 (S)            | 13 (S)  | 15 (S)            |
| Fabricated metal products  | 332                                       | 13                | 15      | 20                |
| Machinery  | 333                                       | 60                | 69      | 72                |
| Computer and electronic products                                 | 334                                       | 147 (S)           | 152 (S) | 180 (S)           |
| Computers and peripheral equipment                               | 3341                                      | 127               | 135     | 175               |
| Communications equipment   | 3342                                      | 217 (S)           | 195 (S) | 309 (S)           |
| Semiconductor and other electronic components                    | 3344                                      | 141 (S)           | 132 (S) | 148 (S)           |
| Navigational, measuring, electromedical, and control instruments | 3345                                      | 133               | 146     | 144 (S)           |
| Other computer and electronic products.                          | 334 minus (3341-42, 3344-45)              | 112               | 86      | 92                |
| Electrical equipment, appliances, and components                 | 335                                       | 37                | 44      | 53                |
| Transportation equipment   | 336                                       | 65                | 53      | 59                |
| Motor vehicles, trailers, and parts                              | 3361-63                                   | 64                | 60      | 70                |
| Aerospace products and parts                                     | 3364                                      | 72 (S)            | 43      | 41                |
| Other transportation equipment                                   | 336 minus (3361-64)                       | 40                | 38 (S)  | 49 (S)            |
| Furniture and related products                                   | 337                                       | 10                | 9 (S)   | 11 (S)            |
| Miscellaneous manufacturing                                      | 339                                       | 43                | 50      | 45                |
| Medical equipment and supplies                                   | 3391                                      | 53                | 58      | 57                |
| Other miscellaneous manufacturing                                | 339 minus (3391)                          | 29                | 35      | 28                |
| Other manufacturing  | 31-33 minus (311-16, 321-27, 331-37, 339) | --                | --      | --                |

See explanatory information and SOURCE at end of table.

Table A-40. Full-time equivalent (FTE) R&D scientists and engineers per 1,000 employees in companies that performed industrial R&D in the U.S., by industry and size of company: 1999-2001

Page 2 of 3

| Industry and size of company                           | NAICS codes                 | 1999 <sup>1</sup> | 2000    | 2001 <sup>2</sup> |
|--|-----------------------------|-------------------|---------|-------------------|
| Distribution by industry:                              |                             |                   |         |                   |
| Nonmanufacturing                                       | 21-23, 42, 44-81            | 60                | 65      | 64                |
| Mining, extraction, and support activities             | 21                          | 16                | 29      | 46                |
| Utilities  | 22                          | 2                 | 1       | 2                 |
| Construction   | 23                          | 52                | 8       | 15                |
| Trade  | 42, 44, 45                  | 92                | 76      | 69                |
| Transportation and warehousing                         | 48, 49                      | 1                 | 3       | 2                 |
| Information  | 51                          | 68                | 75      | 80                |
| Publishing   | 511                         | 230               | 248     | 222               |
| Newspaper, periodical, book, and database              | 5111                        | 26                | 31      | 32                |
| Software   | 5112                        | 344               | 358     | 334               |
| Broadcasting and telecommunications                    | 513                         | 14 (S)            | 12 (S)  | (D)               |
| Radio and television broadcasting                      | 5131                        | (D)               | (D)     | (D)               |
| Telecommunications                                     | 5133                        | (D)               | (D)     | 11 (S)            |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)      | (D)               | 356     | (D)               |
| Other information                                      | 51 minus (511, 513)         | 114               | 95      | (D)               |
| Finance, insurance, and real estate                    | 52, 53                      | 20                | 25      | 26                |
| Professional, scientific, and technical services       | 54                          | 173               | 201     | 181               |
| Architectural, engineering, and related services       | 5413                        | 180               | 207 (S) | 135 (S)           |
| Computer systems design and related services           | 5415                        | 162               | 174     | 216               |
| Scientific R&D services                                | 5417                        | 348               | 366     | 378               |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417) | 40                | 61      | 35                |
| Management of companies and enterprises                | 55                          | 65                | 110     | 34                |
| Health care services                                   | 621-23                      | 84                | 20      | 40                |
| Other nonmanufacturing                                 | 56, 61, 624, 71, 72, 81     | 7                 | 8       | 18                |

See explanatory information and SOURCE at end of table.

Table A-40. Full-time equivalent (FTE) R&D scientists and engineers per 1,000 employees in companies that performed industrial R&D in the U.S., by industry and size of company: 1999-2001

Page 3 of 3

| Industry and size of company                              | NAICS codes | 1999 <sup>1</sup> | 2000   | 2001 <sup>2</sup> |
|---|-------------|-------------------|--------|-------------------|
| Distribution by size of company:<br>[Number of employees] |             |                   |        |                   |
| Total   |             | 57                | 59     | 63                |
| 5 to 24   |             | 249               | 295    | 277               |
| 25 to 49  |             | 144               | 179    | 166               |
| 50 to 99  |             | 163               | 111    | 106               |
| 100 to 249  |             | 81                | 94     | 106               |
| 250 to 499  |             | 68                | 79     | 90                |
| 500 to 999  |             | 82                | 92     | 79                |
| 1,000 to 4,999  |             | 58                | 49     | 67                |
| 5,000 to 9,999  |             | 58                | 59 (S) | 61 (S)            |
| 10,000 to 24,999  |             | 37                | 56     | 62                |
| 25,000 or more  |             | 45                | 46 (S) | 46 (S)            |

<sup>1</sup> Some statistics for 1999 have been revised since originally published.

<sup>2</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.  
(S) = Indicates imputation of more than 50 percent.  
(--) = Indicates data not collected.

NOTES: For 1999, 2000, and 2001, the frame from which the statistical samples were selected was divided into two partitions based on total company employment. In the manufacturing sector, companies with employment of 50 or more were included in the large company partition. In the nonmanufacturing sector, companies with employment of 15 or more were included in the large company partition. Companies in the respective sectors with employment below these values, but with at least 5 employees, were included in the small company partition. The purpose of partitioning the sample this way was to reduce the variability in industry estimates largely attributed to the random year-to-year selection of small companies by industry and the high sampling weights that sometimes were assigned to them. Because of this, in prior years detailed industry statistics were published only from the large company partition; detailed industry statistics from the small company partition were not. Statistics from the small company partition were included in the manufacturing, nonmanufacturing, and all industries totals, but were aggregated into "small manufacturing" and "small nonmanufacturing" classifications instead of being included in their respective industry classifications. For this report, this practice was evaluated and discontinued because it was determined that the data for small companies are more useful if they are included in their respective industries even given the sampling concerns described above. Consequently, the "small manufacturing" and "small nonmanufacturing" stublines are no longer present. For 1999 and 2000, statistics previously published for the firms in the small company classifications are not shown separately in this table, but are included in the manufacturing, nonmanufacturing, and all industries totals. For more information, see the technical notes in Survey of Industrial Research and Development Methodology: 2001 at <http://www.nsf.gov/sbe/srs/sird/start.htm>

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-41. Total (Federal plus company and other) funds for industrial R&amp;D performance in the U.S., by industry and size of company, by technology area: 2001

Page 1 of 3

Page 1 of 1

| Industry and size of company  | NAICS codes                     | Total<br>number of<br>companies | Total<br>amount <sup>1</sup><br>[In millions of<br>dollars] | Biotechnology R&D      |                                       | Software<br>development R&D |                                       | Materials synthesis<br>and processing R&D |                                       | R&D in other<br>technology areas<br>including nanotechnology |                                       | Undistributed<br>R&D   |                                       |
|---|---------------------------------|---------------------------------|---|------------------------|---------------------------------------|-----------------------------|---------------------------------------|---|---------------------------------------|--|---------------------------------------|------------------------|---------------------------------------|
|   |                                 |                                 |   | Number of<br>companies | Amount<br>[In millions of<br>dollars] | Number of<br>companies      | Amount<br>[In millions of<br>dollars] | Number of<br>companies                    | Amount<br>[In millions of<br>dollars] | Number of<br>companies                                       | Amount<br>[In millions of<br>dollars] | Number of<br>companies | Amount<br>[In millions of<br>dollars] |
|   |                                 |                                 |   |                        |                                       |                             |                                       |   |                                       |  |                                       |                        |                                       |
| Distribution by industry:   |                                 |                                 |   |                        |                                       |                             |                                       |   |                                       |  |                                       |                        |                                       |
| All industries  | 21-23, 31-33,<br>42, 44-81      | 33,263                          | 198,505   | 147                    | 7,350                                 | 242                         | 9,417                                 | 126                                       | 7,681                                 | 249  | 14,624                                | 32,707                 | 159,432                               |
| Manufacturing   | 31-33                           | 16,817                          | 120,705   | 39                     | 2,193                                 | 62                          | 796                                   | 105                                       | 7,058                                 | 161  | 10,194                                | 16,589                 | 100,464                               |
| Food  | 311                             | 969                             | 1,819   | 4                      | 55                                    | 2                           | (D)                                   | 1   | (D)                                   | 7  | 319                                   | 963                    | 1,441                                 |
| Beverage and tobacco products                                       | 312                             | 12                              | 152   | 0                      | 0                                     | 0                           | 0                                     | 1   | (D)                                   | 0  | 0                                     | 11                     | (D)                                   |
| Textiles, apparel, and leather                                      | 313-16                          | 514                             | (D)   | 0                      | 0                                     | 0                           | 0                                     | 1   | (D)                                   | 2  | (D)                                   | 513                    | 245                                   |
| Wood products   | 321                             | 177                             | 182   | 0                      | 0                                     | 0                           | 0                                     | 1   | (D)                                   | 1  | (D)                                   | 175                    | (D)                                   |
| Paper, printing and support activities                              | 322, 323                        | 495                             | (D)   | 1                      | (D)                                   | 0                           | 0                                     | 2   | (D)                                   | 5  | 50                                    | 489                    | 2,559                                 |
| Petroleum and coal products   | 324                             | 27                              | (D)   | 2                      | (D)                                   | 1                           | (D)                                   | 2   | (D)                                   | 1  | (D)                                   | 26                     | 798                                   |
| Chemicals   | 325                             | 1,877                           | 17,892  | 20                     | 1,925                                 | 2                           | (D)                                   | 18  | 420                                   | 13   | (D)                                   | 1,842                  | 15,344                                |
| Basic chemicals   | 3251                            | 523                             | 1,876   | 4                      | (D)                                   | 1                           | (D)                                   | 8   | 205                                   | 5  | (D)                                   | 512                    | 1,596                                 |
| Resin, synthetic rubber, fibers, and<br>filament                    | 3252                            | 66                              | (D)   | 0                      | 0                                     | 0                           | 0                                     | 2   | (D)                                   | 1  | (D)                                   | 64                     | 2,730                                 |
| Pharmaceuticals and medicines                                       | 3254                            | 347                             | 10,137  | 15                     | 1,882                                 | 1                           | (D)                                   | 2   | (D)                                   | 5  | 150                                   | 332                    | 8,049                                 |
| Other chemicals   | 325 minus (3251-52,<br>3254)    | 941                             | (D)   | 1                      | (D)                                   | 0                           | 0                                     | 6   | 130                                   | 2  | (D)                                   | 934                    | 2,969                                 |
| Plastics and rubber products  | 326                             | 811                             | (D)   | 0                      | 0                                     | 0                           | 0                                     | 7   | (D)                                   | 3  | 98                                    | 801                    | 2,082                                 |
| Nonmetallic mineral products  | 327                             | 464                             | 990   | 0                      | 0                                     | 0                           | 0                                     | 4   | 29                                    | 4  | 29                                    | 460                    | 932                                   |
| Primary metals  | 331                             | 427                             | 485   | 1                      | (D)                                   | 1                           | (D)                                   | 5   | 208                                   | 2  | (D)                                   | 423                    | 257                                   |
| Fabricated metal products   | 332                             | 1,393                           | 1,599   | 0                      | 0                                     | 0                           | 0                                     | 4   | (D)                                   | 6  | (D)                                   | 1,388                  | 1,496                                 |
| Machinery   | 333                             | 2,489                           | 6,404   | 0                      | 0                                     | 8                           | 75                                    | 13  | 813                                   | 21   | 704                                   | 2,462                  | 4,812                                 |
| Computer and electronic products                                    | 334                             | 3,230                           | 47,079  | 6                      | 48                                    | 40                          | 671                                   | 21  | 4,377                                 | 64   | 4,270                                 | 3,150                  | 37,713                                |
| Computers and peripheral equipment                                  | 3341                            | 238                             | (D)   | 0                      | 0                                     | 7                           | (D)                                   | 0   | 0                                     | 12   | 393                                   | 225                    | 2,679                                 |
| Communications equipment  | 3342                            | 580                             | 15,507  | 0                      | 0                                     | 11                          | (D)                                   | 1   | (D)                                   | 12   | 614                                   | 567                    | 14,438                                |
| Semiconductor and other electronic<br>components                    | 3344                            | 735                             | 14,358  | 2                      | (D)                                   | 5                           | (D)                                   | 9   | 3,909                                 | 21   | 2,889                                 | 711                    | 7,497                                 |
| Navigational, measuring, electromedical,<br>and control instruments | 3345                            | 1,538                           | 12,947  | 4                      | (D)                                   | 15                          | (D)                                   | 10  | 424                                   | 19   | 374                                   | 1,511                  | 12,059                                |
| Other computer and electronic products                              | 334 minus (3341-42,<br>3344-45) | 139                             | (D)   | 0                      | 0                                     | 2                           | (D)                                   | 1   | (D)                                   | 0  | 0                                     | 136                    | 1,040                                 |
| Electrical equipment, appliances, and<br>components                 | 335                             | 1,012                           | 4,980   | 0                      | 0                                     | 2                           | (D)                                   | 4   | (D)                                   | 11   | 436                                   | 999                    | 4,500                                 |
| Transportation equipment  | 336                             | 1,015                           | 25,965  | 0                      | 0                                     | 2                           | (D)                                   | 11  | 637                                   | 11   | (D)                                   | 997                    | 21,538                                |

See explanatory information and SOURCE at end of table.

Table A-41. Total (Federal plus company and other) funds for industrial R&amp;D performance in the U.S., by industry and size of company, by technology area: 2001

| Industry and size of company                     | NAICS codes                               | Total number of companies | Total amount <sup>1</sup><br>[In millions of dollars] | Biotechnology R&D   |                                    | Software development R&D |                                    | Materials synthesis and processing R&D |                                    | R&D in other technology areas including nanotechnology |                                    | Undistributed R&D   |                                    |
|--|---|---------------------------|---|---------------------|------------------------------------|--------------------------|------------------------------------|--|------------------------------------|--|------------------------------------|---------------------|------------------------------------|
|  |   |                           |   | Number of companies | Amount<br>[In millions of dollars] | Number of companies      | Amount<br>[In millions of dollars] | Number of companies                    | Amount<br>[In millions of dollars] | Number of companies                                    | Amount<br>[In millions of dollars] | Number of companies | Amount<br>[In millions of dollars] |
| Distribution by industry:                        |   |                           |   |                     |                                    |                          |                                    |  |                                    |  |                                    |                     |                                    |
| Motor vehicles, trailers, and parts              | 3361-63                                   | 648                       | (D)   | 0                   | 0                                  | 1                        | (D)                                | 10                                     | (D)                                | 6  | (D)                                | 636                 | 13,258                             |
| Aerospace products and parts                     | 3364                                      | 115                       | 7,868   | 0                   | 0                                  | 0                        | 0                                  | 0                                      | 0                                  | 3  | (D)                                | 112                 | (D)                                |
| Other transportation equipment                   | 336 minus (3361-64)                       | 252                       | (D)   | 0                   | 0                                  | 1                        | (D)                                | 1                                      | (D)                                | 2  | (D)                                | 249                 | (D)                                |
| Furniture and related products                   | 337                                       | 324                       | 301   | 0                   | 0                                  | 0                        | 0                                  | 1                                      | (D)                                | 2  | (D)                                | 322                 | 242                                |
| Miscellaneous manufacturing                      | 339                                       | 1,580                     | 6,606   | 5                   | 154                                | 4                        | 7                                  | 9                                      | 127                                | 8  | 83                                 | 1,567               | 6,234                              |
| Medical equipment and supplies                   | 3391                                      | 737                       | (D)   | 4                   | (D)                                | 3                        | (D)                                | 6                                      | 30                                 | 6  | (D)                                | 727                 | 5,746                              |
| Other miscellaneous manufacturing                | 339 minus (3391)                          | 843                       | (D)   | 1                   | (D)                                | 1                        | (D)                                | 3                                      | 97                                 | 2  | (D)                                | 840                 | 488                                |
| Other manufacturing                              | 31-33 minus (311-16, 321-27, 331-37, 339) | --                        | --  | --                  | --                                 | --                       | --                                 | --                                     | --                                 | --   | --                                 | --                  | --                                 |
| Nonmanufacturing                                 | 21-23, 42, 44-81                          | 16,446                    | 77,799  | 108                 | 5,157                              | 180                      | 8,620                              | 21                                     | 623                                | 88   | 4,431                              | 16,118              | 58,968                             |
| Mining, extraction, and support activities       | 21  | 68                        | (D)   | 2                   | (D)                                | 0                        | 0                                  | 2                                      | (D)                                | 5  | 176                                | 62                  | 626 (S)                            |
| Utilities  | 22  | 85                        | 133   | 0                   | 0                                  | 1                        | (D)                                | 1                                      | (D)                                | 3  | (D)                                | 82                  | 93                                 |
| Construction                                     | 23  | 399                       | 320   | 0                   | 0                                  | 0                        | 0                                  | 1                                      | (D)                                | 1  | (D)                                | 397                 | 305                                |
| Trade  | 42, 44, 45                                | 4,735                     | 24,372  | 8                   | 1,104                              | 12                       | 1,387                              | 5                                      | 465                                | 16   | 2,171                              | 4,706               | 19,244                             |
| Transportation and warehousing                   | 48, 49                                    | 362                       | 1,848   | 0                   | 0                                  | 2                        | (D)                                | 1                                      | (D)                                | 1  | (D)                                | 360                 | 1,709                              |
| Information                                      | 51  | 1,850                     | (D)   | 0                   | 0                                  | 66                       | 4,719                              | 1                                      | (D)                                | 9  | 449                                | 1,781               | 12,180                             |
| Publishing                                       | 511                                       | 1,279                     | 13,760  | 0                   | 0                                  | 56                       | 3,562                              | 1                                      | (D)                                | 4  | (D)                                | 1,221               | 10,145                             |
| Newspaper, periodical, book, and database        | 5111                                      | 152                       | 649   | 0                   | 0                                  | 3                        | (D)                                | 0                                      | 0                                  | 1  | (D)                                | 148                 | 604                                |
| Software   | 5112                                      | 1,127                     | 13,111  | 0                   | 0                                  | 53                       | (D)                                | 1                                      | (D)                                | 3  | (D)                                | 1,073               | 9,541                              |
| Broadcasting and telecommunications              | 513                                       | 361                       | (D)   | 0                   | 0                                  | 2                        | (D)                                | 0                                      | 0                                  | 1  | (D)                                | 360                 | 1,238                              |
| Radio and television broadcasting                | 5131                                      | 51                        | (D)   | 0                   | 0                                  | 0                        | 0                                  | 0                                      | 0                                  | 0  | 0                                  | 51                  | (D)                                |
| Telecommunications                               | 5133                                      | 310                       | (D)   | 0                   | 0                                  | 2                        | (D)                                | 0                                      | 0                                  | 1  | (D)                                | 308                 | 1,069                              |
| Other broadcasting and telecommunications        | 513 minus (5131, 5133)                    | 1                         | (D)   | 0                   | 0                                  | 0                        | 0                                  | 0                                      | 0                                  | 0  | 0                                  | 1                   | (D)                                |
| Other information                                | 51 minus (511, 513)                       | 209                       | (D)   | 0                   | 0                                  | 8                        | (D)                                | 0                                      | 0                                  | 4  | (D)                                | 200                 | 797                                |
| Finance, insurance, and real estate              | 52, 53                                    | 338                       | (D)   | 0                   | 0                                  | 11                       | 870                                | 2                                      | (D)                                | 5  | 54                                 | 325                 | 1,493                              |
| Professional, scientific, and technical services | 54  | 5,840                     | 27,704  | 94                  | 3,999                              | 88                       | 1,515                              | 8                                      | 105                                | 47   | 1,509                              | 5,642               | 20,576                             |

See explanatory information and SOURCE at end of table.



Table A-41. Total (Federal plus company and other) funds for industrial R&amp;D performance in the U.S., by industry and size of company, by technology area: 2001

| Industry and size of company                              | NAICS codes                 | Total number of companies | Total amount <sup>1</sup><br>[In millions of dollars] | Biotechnology R&D   |                                 | Software development R&D |                                 | Materials synthesis and processing R&D |                                 | R&D in other technology areas including nanotechnology |                                 | Undistributed R&D   |                                 |
|---|-----------------------------|---------------------------|---|---------------------|---------------------------------|--------------------------|---------------------------------|--|---------------------------------|--|---------------------------------|---------------------|---------------------------------|
|   |                             |                           |   | Number of companies | Amount [In millions of dollars] | Number of companies      | Amount [In millions of dollars] | Number of companies                    | Amount [In millions of dollars] | Number of companies                                    | Amount [In millions of dollars] | Number of companies | Amount [In millions of dollars] |
| Distribution by industry:                                 |                             |                           |   |                     |                                 |                          |                                 |  |                                 |  |                                 |                     |                                 |
| Architectural, engineering, and related services          | 5413                        | 938                       | 3,386   | 5                   | (D)                             | 8                        | (D)                             | 0                                      | 0                               | 15   | 1,052                           | 921                 | 2,225                           |
| Computer systems design and related services              | 5415                        | 2,516                     | 9,154   | 0                   | 0                               | 64                       | 1,366                           | 1                                      | (D)                             | 5  | (D)                             | 2,450               | 7,679                           |
| Scientific R&D services                                   | 5417                        | 1,576                     | 14,244  | 88                  | 3,846                           | 12                       | 79                              | 6                                      | 75                              | 26   | 373                             | 1,465               | 9,870                           |
| Other professional, scientific, and technical services    | 54 minus (5413, 5415, 5417) | 811                       | 920   | 1                   | (D)                             | 4                        | (D)                             | 1                                      | (D)                             | 1  | (D)                             | 806                 | 802                             |
| Management of companies and enterprises                   | 55                          | 375                       | 381   | 1                   | (D)                             | 0                        | 0                               | 0                                      | 0                               | 0  | 0                               | 374                 | (D)                             |
| Health care services                                      | 621-23                      | 1,294                     | 1,149   | 3                   | 25                              | 0                        | 0                               | 0                                      | 0                               | 0  | 0                               | 1,291               | 1,124                           |
| Other nonmanufacturing                                    | 56, 61, 624, 71, 72, 81     | 1,099                     | 1,259   | 0                   | 0                               | 0                        | 0                               | 0                                      | 0                               | 1  | (D)                             | 1,098               | (D)                             |
| Distribution by size of company:<br>[Number of employees] |                             |                           |   |                     |                                 |                          |                                 |  |                                 |  |                                 |                     |                                 |
| Total   |                             | 33,263                    | 198,505   | 147                 | 7,350                           | 242                      | 9,417                           | 126                                    | 7,681                           | 249  | 14,624                          | 32,707              | 159,432                         |
| 5 to 24   |                             | 14,681                    | 4,828   | 0                   | 0                               | 1                        | (D)                             | 1                                      | (D)                             | 1  | (D)                             | 14,679              | 4,828                           |
| 25 to 49  |                             | 5,036                     | 3,750   | 9                   | 118                             | 2                        | (D)                             | 1                                      | (D)                             | 5  | (D)                             | 5,023               | 3,607                           |
| 50 to 99  |                             | 5,030                     | 8,202   | 25                  | 398                             | 12                       | (D)                             | 2                                      | (D)                             | 14   | 89                              | 4,987               | 7,652                           |
| 100 to 249  |                             | 4,261                     | 12,916  | 37                  | 869                             | 48                       | 405                             | 6                                      | 77                              | 34   | 481                             | 4,158               | 11,083                          |
| 250 to 499  |                             | 1,504                     | 8,702   | 19                  | 533                             | 42                       | 540                             | 5                                      | 41                              | 18   | 245                             | 1,432               | 7,343                           |
| 500 to 999  |                             | 1,194                     | 10,564  | 19                  | 1,300                           | 48                       | 1,041                           | 9                                      | 51                              | 41   | 1,042                           | 1,102               | 7,130                           |
| 1,000 to 4,999  |                             | 1,039                     | 26,748  | 23                  | 2,155                           | 53                       | 2,607                           | 60                                     | 1,504                           | 70   | 3,004                           | 888                 | 17,477                          |
| 5,000 to 9,999  |                             | 244                       | 17,487  | 3                   | (D)                             | 7                        | 335                             | 14                                     | (D)                             | 25   | 2,538                           | 212                 | 13,799                          |
| 10,000 to 24,999  |                             | 156                       | 27,065  | 4                   | 149                             | 18                       | 1,982                           | 13                                     | 593                             | 25   | 1,616                           | 128                 | 22,725                          |
| 25,000 or more  |                             | 118                       | 78,244  | 8                   | (D)                             | 11                       | (D)                             | 15                                     | 5,153                           | 16   | 5,592                           | 98                  | 63,788                          |

<sup>1</sup> Beginning with 2001, statistics for total and Federally funded industrial R&D exclude data for Federally Funded Research and Development Centers (FFRDCs).

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

(--) = Indicates data not collected.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001

Table A-42. Company and other non-Federal funds for industrial R&D performance in the U.S. performed by outside organizations and number of R&D-performing companies that funded outside performance of R&D, by industry and size of company, by type of organization: 2001

| Industry and size of company  | NAICS codes                     | Total<br>number of<br>companies | Total<br>company-funded<br>R&D contracted-out<br>[In millions of<br>dollars] | For-profit<br>companies   |                                       | Universities<br>or colleges |                                       | Nonprofit organizations<br>(other than universities<br>and colleges) |                                       | Undistributed<br>contracted out<br>R&D |                                       |
|---|---------------------------------|---------------------------------|--|---------------------------|---------------------------------------|-----------------------------|---------------------------------------|--|---------------------------------------|--|---------------------------------------|
|   |                                 |                                 |  | Number<br>of<br>companies | Amount<br>[In millions of<br>dollars] | Number<br>of<br>companies   | Amount<br>[In millions of<br>dollars] | Number<br>of<br>companies  | Amount<br>[In millions of<br>dollars] | Number<br>of<br>companies              | Amount<br>[In millions of<br>dollars] |
| Distribution by industry:   |                                 |                                 |  |                           |                                       |                             |                                       |  |                                       |  |                                       |
| All industries  | 21-23, 31-33, 42, 44-81         | 2,939                           | 8,723  | 160                       | 2,378                                 | 68                          | 401                                   | 25   | 107                                   | 33,263                                 | 5,837                                 |
| Manufacturing   | 31-33                           | 1,363                           | 3,957  | 68                        | 1,584                                 | 30                          | 126                                   | 12   | 47                                    | 16,817                                 | 2,200                                 |
| Food  | 311                             | 53                              | 59   | 3                         | (D)                                   | 1                           | (D)                                   | 1  | (D)                                   | 969                                    | 14                                    |
| Beverage and tobacco products                                       | 312                             | 2                               | 7  | 0                         | 0                                     | 0                           | 0                                     | 0  | 0                                     | 12                                     | 7                                     |
| Textiles, apparel, and leather                                      | 313-16                          | 6                               | 2  | 1                         | (D)                                   | 0                           | 0                                     | 0  | 0                                     | 514                                    | (D)                                   |
| Wood products   | 321                             | 2                               | (D)  | 1                         | (D)                                   | 0                           | 0                                     | 0  | 0                                     | 177                                    | 0                                     |
| Paper, printing and support activities                              | 322, 323                        | 2                               | (D)  | 0                         | 0                                     | 0                           | 0                                     | 0  | 0                                     | 495                                    | (D)                                   |
| Petroleum and coal products   | 324                             | 3                               | 107  | 1                         | (D)                                   | 1                           | (D)                                   | 1  | (D)                                   | 27                                     | 81                                    |
| Chemicals   | 325                             | 325                             | 2,065  | 13                        | 691                                   | 7                           | 101                                   | 3  | 40                                    | 1,877                                  | 1,233                                 |
| Basic chemicals   | 3251                            | 124                             | (D)  | 2                         | (D)                                   | 2                           | (D)                                   | 0  | 0                                     | 523                                    | (D)                                   |
| Resin, synthetic rubber, fibers, and filament                       | 3252                            | 4                               | (D)  | 1                         | (D)                                   | 1                           | (D)                                   | 0  | 0                                     | 66                                     | (D)                                   |
| Pharmaceuticals and medicines                                       | 3254                            | 162                             | 1,899  | 9                         | (D)                                   | 3                           | (D)                                   | 3  | 40                                    | 347                                    | 1,086                                 |
| Other chemicals   | 325 minus (3251-52,<br>3254)    | 35                              | 99   | 1                         | (D)                                   | 1                           | (D)                                   | 0  | 0                                     | 941                                    | 98                                    |
| Plastics and rubber products  | 326                             | 23                              | 22   | 2                         | (D)                                   | 2                           | (D)                                   | 0  | 0                                     | 811                                    | 21                                    |
| Nonmetallic mineral products  | 327                             | 10                              | 2  | 0                         | 0                                     | 1                           | (D)                                   | 0  | 0                                     | 464                                    | (D)                                   |
| Primary metals  | 331                             | 19                              | 4  | 2                         | (D)                                   | 2                           | (D)                                   | 2  | (D)                                   | 427                                    | (D)                                   |
| Fabricated metal products   | 332                             | 46                              | 10   | 2                         | (D)                                   | 0                           | 0                                     | 0  | 0                                     | 1,393                                  | (D)                                   |
| Machinery   | 333                             | 51                              | 115  | 9                         | 84                                    | 3                           | (D)                                   | 2  | (D)                                   | 2,489                                  | 25                                    |
| Computer and electronic products                                    | 334                             | 530                             | 565  | 17                        | 85                                    | 8                           | (D)                                   | 1  | (D)                                   | 3,230                                  | 477                                   |
| Computers and peripheral equipment                                  | 3341                            | 119                             | 118  | 3                         | (D)                                   | 0                           | 0                                     | 0  | 0                                     | 238                                    | (D)                                   |
| Communications equipment  | 3342                            | 87                              | 80   | 3                         | (D)                                   | 0                           | 0                                     | 0  | 0                                     | 580                                    | (D)                                   |
| Semiconductor and other electronic components                       | 3344                            | 108                             | 86   | 4                         | 16                                    | 2                           | (D)                                   | 1  | (D)                                   | 735                                    | 70                                    |
| Navigational, measuring, electromedical,<br>and control instruments | 3345                            | 210                             | 278  | 6                         | 8                                     | 6                           | 2                                     | 0  | 0                                     | 1,538                                  | 268                                   |
| Other computer and electronic products                              | 334 minus (3341-42,<br>3344-45) | 5                               | 2  | 1                         | (D)                                   | 0                           | 0                                     | 0  | 0                                     | 139                                    | (D)                                   |
| Electrical equipment, appliances, and components                    | 335                             | 81                              | 60 (S)   | 7                         | (D)                                   | 1                           | (D)                                   | 0  | 0                                     | 1,012                                  | 53 (S)                                |
| Transportation equipment  | 336                             | 62                              | 708  | 7                         | 646                                   | 2                           | (D)                                   | 1  | (D)                                   | 1,015                                  | 62                                    |
| Motor vehicles, trailers, and parts                                 | 3361-63                         | 10                              | 657  | 6                         | (D)                                   | 1                           | (D)                                   | 0  | 0                                     | 648                                    | (D)                                   |
| Aerospace products and parts  | 3364                            | 50                              | (D)  | 0                         | 0                                     | 0                           | 0                                     | 0  | 0                                     | 115                                    | (D)                                   |
| Other transportation equipment                                      | 336 minus (3361-64)             | 2                               | (D)  | 1                         | (D)                                   | 1                           | (D)                                   | 1  | (D)                                   | 252                                    | 0                                     |

See explanatory information and SOURCE at end of table.

Table A-42. Company and other non-Federal funds for industrial R&D performance in the U.S. performed by outside organizations and number of R&D-performing companies that funded outside performance of R&D, by industry and size of company, by type of organization: 2001

| Industry and size of company                           | NAICS codes                               | Total number of companies | Total company-funded R&D contracted-out [In millions of dollars] | For-profit companies |                                 | Universities or colleges |                                 | Nonprofit organizations (other than universities and colleges) |                                 | Undistributed contracted out R&D |                                 |
|--|---|---------------------------|--|----------------------|---------------------------------|--------------------------|---------------------------------|--|---------------------------------|----------------------------------|---------------------------------|
|  |   |                           |  | Number of companies  | Amount [In millions of dollars] | Number of companies      | Amount [In millions of dollars] | Number of companies  | Amount [In millions of dollars] | Number of companies              | Amount [In millions of dollars] |
| Distribution by industry:                              |   |                           |  |                      |                                 |                          |                                 |  |                                 |                                  |                                 |
| Furniture and related products                         | 337                                       | 4                         | 2  | 0                    | 0                               | 0                        | 0                               | 0  | 0                               | 324                              | 2                               |
| Miscellaneous manufacturing                            | 339                                       | 145                       | 54   | 3                    | 4                               | 2                        | (D)                             | 1  | (D)                             | 1,580                            | 48                              |
| Medical equipment and supplies                         | 3391                                      | 110                       | 50   | 3                    | 4                               | 2                        | (D)                             | 1  | (D)                             | 737                              | 45                              |
| Other miscellaneous manufacturing                      | 339 minus (3391)                          | 34                        | 4  | 0                    | 0                               | 0                        | 0                               | 0  | 0                               | 843                              | 4                               |
| Other manufacturing                                    | 31-33 minus (311-16, 321-27, 331-37, 339) | --                        | --   | --                   | --                              | --                       | --                              | --   | --                              | --                               | --                              |
| Nonmanufacturing                                       | 21-23, 42, 44-81                          | 1,576                     | 4,766  | 92                   | 794                             | 38                       | 275                             | 13   | 60                              | 16,446                           | 3,637                           |
| Mining, extraction, and support activities             | 21  | 4                         | 11   | 1                    | (D)                             | 1                        | (D)                             | 0  | 0                               | 68                               | (D)                             |
| Utilities  | 22  | 26                        | 93   | 1                    | (D)                             | 0                        | 0                               | 1  | (D)                             | 85                               | 75                              |
| Construction   | 23  | 63                        | (D)  | 0                    | 0                               | 0                        | 0                               | 0  | 0                               | 399                              | (D)                             |
| Trade  | 42, 44, 45                                | 429                       | 1,887  | 9                    | (D)                             | 1                        | (D)                             | 1  | (D)                             | 4,735                            | 1,772                           |
| Transportation and warehousing                         | 48, 49                                    | 3                         | (D)  | 0                    | 0                               | 0                        | 0                               | 0  | 0                               | 362                              | (D)                             |
| Information  | 51  | 237                       | 577  | 18                   | (D)                             | 3                        | (D)                             | 0  | 0                               | 1,850                            | 420                             |
| Publishing   | 511                                       | 153                       | 187  | 13                   | (D)                             | 2                        | (D)                             | 0  | 0                               | 1,279                            | 146                             |
| Newspaper, periodical, book, and database              | 5111                                      | 4                         | 10   | 1                    | (D)                             | 0                        | (D)                             | 0  | 0                               | 152                              | 8                               |
| Software   | 5112                                      | 149                       | 177  | 12                   | (D)                             | 2                        | (D)                             | 0  | 0                               | 1,127                            | 138                             |
| Broadcasting and telecommunications                    | 513                                       | 4                         | 171  | 1                    | (D)                             | 0                        | 0                               | 0  | 0                               | 361                              | (D)                             |
| Radio and television broadcasting                      | 5131                                      | 0                         | 0  | 0                    | 0                               | 0                        | 0                               | 0  | 0                               | 51                               | 0                               |
| Telecommunications                                     | 5133                                      | 4                         | 171  | 1                    | (D)                             | 0                        | 0                               | 0  | 0                               | 310                              | (D)                             |
| Other broadcasting and telecommunications              | 513 minus (5131, 5133)                    | 0                         | 0  | 0                    | 0                               | 0                        | 0                               | 0  | 0                               | 1                                | 0                               |
| Other information                                      | 51 minus (511, 513)                       | 81                        | 218  | 4                    | (D)                             | 1                        | (D)                             | 0  | 0                               | 209                              | (D)                             |
| Finance, insurance, and real estate                    | 52, 53                                    | 27                        | 241  | 7                    | 165                             | 0                        | 0                               | 0  | 0                               | 338                              | 75                              |
| Professional, scientific, and technical services       | 54  | 655                       | 1,676  | 53                   | 383                             | 31                       | 261                             | 10   | 21                              | 5,840                            | 1,012                           |
| Architectural, engineering, and related services       | 5413                                      | 92                        | 86   | 3                    | (D)                             | 2                        | (D)                             | 0  | 0                               | 938                              | 72                              |
| Computer systems design and related services           | 5415                                      | 114                       | 233  | 4                    | 2                               | 0                        | 0                               | 0  | 0                               | 2,516                            | 232                             |
| Scientific R&D services                                | 5417                                      | 441                       | 1,310  | 43                   | 346                             | 28                       | 251                             | 10   | 21                              | 1,576                            | 693                             |
| Other professional, scientific, and technical services | 54 minus (5413, 5415, 5417)               | 8                         | 46   | 3                    | (D)                             | 1                        | (D)                             | 0  | 0                               | 811                              | 15                              |

See explanatory information and SOURCE at end of table.

Table A-42. Company and other non-Federal funds for industrial R&D performance in the U.S. performed by outside organizations and number of R&D-performing companies that funded outside performance of R&D, by industry and size of company, by type of organization: 2001

| Industry and size of company                              | NAICS codes             | Total<br>number of<br>companies | Total<br>company-funded<br>R&D contracted-out<br>[In millions of<br>dollars] | For-profit<br>companies   |                                       | Universities<br>or colleges |                                       | Nonprofit organizations<br>(other than universities<br>and colleges) |                                       | Undistributed<br>contracted out<br>R&D |                                       |
|---|-------------------------|---------------------------------|--|---------------------------|---------------------------------------|-----------------------------|---------------------------------------|--|---------------------------------------|--|---------------------------------------|
|   |                         |                                 |  | Number<br>of<br>companies | Amount<br>[In millions of<br>dollars] | Number<br>of<br>companies   | Amount<br>[In millions of<br>dollars] | Number<br>of<br>companies  | Amount<br>[In millions of<br>dollars] | Number<br>of<br>companies              | Amount<br>[In millions of<br>dollars] |
| Distribution by industry:                                 |                         |                                 |  |                           |                                       |                             |                                       |  |                                       |  |                                       |
| Management of companies and enterprises                   | 55                      | 18                              | 22   | 0                         | 0                                     | 0                           | 0                                     | 0  | 0                                     | 375                                    | 22                                    |
| Health care services                                      | 621-23                  | 6                               | (D)  | 2                         | (D)                                   | 1                           | (D)                                   | 1  | (D)                                   | 1,294                                  | 2                                     |
| Other nonmanufacturing                                    | 56, 61, 624, 71, 72, 81 | 107                             | 245  | 1                         | (D)                                   | 1                           | (D)                                   | 0  | 0                                     | 1,099                                  | 245                                   |
| Distribution by size of company:<br>[Number of employees] |                         |                                 |  |                           |                                       |                             |                                       |  |                                       |  |                                       |
| Total   |                         | 2,939                           | 8,723  | 160                       | 2,378                                 | 68                          | 401                                   | 25   | 107                                   | 33,263                                 | 5,837                                 |
| 5 to 24   |                         | 735                             | 311  | 0                         | 0                                     | 0                           | 0                                     | 0  | 0                                     | 14,681                                 | 311                                   |
| 25 to 49  |                         | 562                             | 265  | 3                         | (D)                                   | 1                           | (D)                                   | 0  | 0                                     | 5,036                                  | 248                                   |
| 50 to 99  |                         | 551                             | 489  | 13                        | 43                                    | 7                           | 7                                     | 4  | 1                                     | 5,030                                  | 438                                   |
| 100 to 249  |                         | 532                             | 1,080  | 32                        | 184                                   | 16                          | 25                                    | 4  | 8                                     | 4,261                                  | 863                                   |
| 250 to 499  |                         | 131                             | 260  | 18                        | (D)                                   | 7                           | 3                                     | 2  | (D)                                   | 1,504                                  | 205                                   |
| 500 to 999  |                         | 158                             | 248  | 21                        | 60                                    | 5                           | 19                                    | 0  | 0                                     | 1,194                                  | 168                                   |
| 1,000 to 4,999  |                         | 150                             | 1,104  | 34                        | 253                                   | 12                          | (D)                                   | 3  | (D)                                   | 1,039                                  | 839                                   |
| 5,000 to 9,999  |                         | 47                              | 1,021  | 12                        | 406                                   | 3                           | (D)                                   | 1  | (D)                                   | 244                                    | 326                                   |
| 10,000 to 24,999  |                         | 34                              | 1,702  | 15                        | 79                                    | 7                           | (D)                                   | 3  | (D)                                   | 156                                    | 1,621                                 |
| 25,000 or more  |                         | 39                              | 2,242  | 12                        | 1,293                                 | 10                          | 68                                    | 8  | 64                                    | 118                                    | 818                                   |

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

(-) = Indicates data not collected.

NOTES: The R&D in this table is the industrial R&D performed outside company facilities funded from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and State governments. Excluded from this table is company-funded R&D not performed within the 50 U.S. states or D.C. (e.g., R&D not performed on U.S. soil by foreign subsidiaries or other foreign organizations).

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Industrial Research and Development: 2001